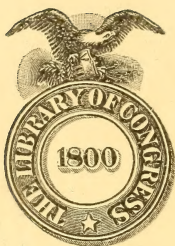


FLORA
OF
PENNSYLVANIA

PORTER



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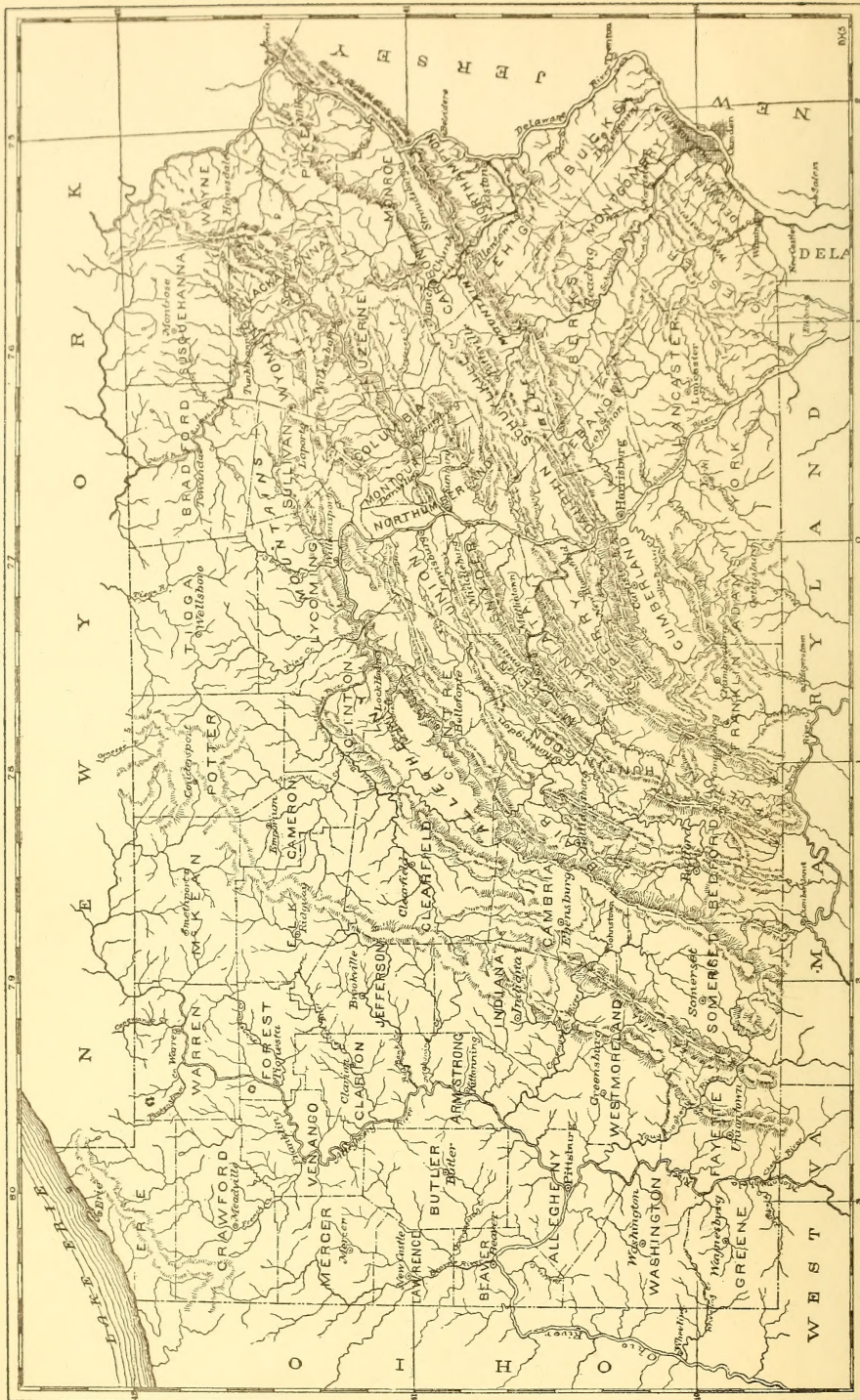


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OUTLINE MAP OF PENNSYLVANIA.

FLORA OF PENNSYLVANIA

BY

THOMAS CONRAD PORTER, D.D., LL.D.

LATE PROFESSOR OF BOTANY IN LAFAYETTE COLLEGE

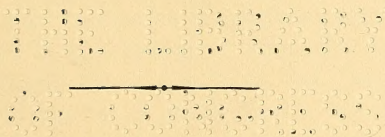
EDITED

WITH THE ADDITION OF ANALYTICAL KEYS

BY

JOHN KUNKEL SMALL, Ph.D.

CURATOR OF THE MUSEUMS AND HERBARIUM OF THE
NEW YORK BOTANICAL GARDEN

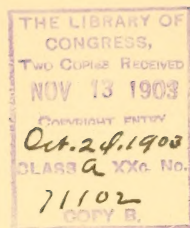


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PREFACE.

DR. PORTER began the collecting and study of the plants of Pennsylvania about the year 1836 and continued both, essentially without interruption, until his death in 1901. He personally explored nearly every part of the State ; but the information thus obtained represents only a portion of the data recorded on the following pages. His connection with several colleges in Pennsylvania for a period of over fifty consecutive years gave him a wide acquaintance with intelligent persons throughout the State, and those interested in plants, more especially the students who came under his influence, did all in their power to enlarge his collection of specimens, so that his State Flora might ultimately be essentially perfect. Thus, through personal exploration and the enthusiastic coöperation of others for a period of over sixty years, the herbarium upon which this Flora is based contains plants brought together from all of the sixty-one counties of Pennsylvania.

Professor Porter's ambition to make his list of Pennsylvania plants complete led him to defer printing it from time to time. So averse was he to giving his work to the public before the list of native plants was complete, that when death overtook him in his eightieth year, the work which he had endeavored to make perfect remained unpublished. However, the manuscript was nearly completed many years ago and was left with most of the more recent discoveries properly recorded. Being so earnestly interested in the botany of Pennsylvania and desiring that others might ultimately have the benefit of his studies, he made provision for its publication in his will.

After the author's death, at the request of his executor, Professor S. A. Martin, I consented to edit the manuscript. I had long been intimately acquainted with Dr. Porter and with his work, and during frequent interviews, the flora of Pennsylvania and the form in which it should be published was often the main subject of conversation and discussion. Being thoroughly acquainted with the author's ideas, I can confidently say he would heartily subscribe to everything on the following pages.

J. K. SMALL.

NEW YORK, *August 15, 1903.*

NOTE.

In this Flora analytical keys formed by the contrasting of diagnostic characters precede the families, genera and species, and a key to the orders precedes the main body of the work. A description and a figure is cited for each species ; for example, "Man. p. 469" refers to a description on page 469 in Britton's Manual of the Flora of the Northern States and Canada, while "Il. Fl. f. 1753" refers to a figure in Britton & Brown's Illustrated Flora of the Northeastern United States, Canada and the British Possessions. Following the known geographical distribution of each species, is recorded its distribution within the State, outlined by counties, as it was known to the author. The outline map of Pennsylvania was drawn for this work by Mr. Benj. H. Smith, who has also kindly read part of the proof.

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Outline Map of Pennsylvania	Frontispiece
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KEY TO THE ORDERS.

Ovules and seeds borne on the face of a bract or a scale : stigmas wanting.

Class 1. GYMNOSPERMAE.

Ovules and seeds in a closed cavity (ovary) : stigmas present.

Class 2. ANGIOSPERMAE.

1. GYMNOSPERMAE.

PAGE.

A single order in our range.

Order PINALES. 1

2. ANGIOSPERMAE.

Cotyledon 1 : stem endogenous : leaf-blades typically with primary or secondary veins parallel.

Subclass 1. MONOCOTYLEDONES.

Cotyledons typically 2 : stem exogenous (with rare exceptions) : leaf-blades netted-veined.

Subclass 2. DICOTYLEDONES.

1. Monocotyledones.

Perianth rudimentary or degenerate, the members often bristles or mere scales, not corolla-like, or wanting.

Flowers not in the axils of dry or chaffy bracts (scales or glumes).

Perianth of bristles or chaffy scales.

Order PANDANALES. 4

Perianth fleshy or herbaceous, or wanting.

Fruit baccate : endosperm present.

Order ARALES. 72

Fruit drupaceous : endosperm wanting.

Order NAIADALES. 5

Flowers in the axils of dry or chaffy, usually imbricated, bracts (scales or glumes).

Order GRAMINALES. 11

Perianth of 2 distinct series, the inner series usually corolloid.

Gynoecium of distinct carpels.

Order ALISMALES. 9

Gynoecium of united carpels.

Endosperm mealy.

Order XYRIDALES. 74

Endosperm fleshy, horny or cartilaginous.

Ovary, and fruit, superior.

Inflorescence not a fleshy spadix.

Order LILIALES. 76

Inflorescence a fleshy spadix subtended by a spathe.

Order ARALES. 72

Ovary, and fruit, wholly inferior or half-inferior.

Endosperm present and usually copious.

Order AMARYLLIDALES. 88

Endosperm wanting.

Flowers regular, monoecious or dioecious : aquatic plants.

Order HYDROCHARITALES. 10

Flowers irregular, perfect : terrestrial or epiphytic plants.

Order ORCHIDALES. 90

2. Dicotyledones.

A. Corolla wanting, except in the pistillate flowers of *Juglans* (Juglandaceae).

a. Calyx wanting, at least in the staminate flowers.

b. Herbs.

c. Flowers mainly perfect.

- Seeds solitary in each carpel or cavity of the ovary : endosperm present.
 Flowers spicate : styles wanting : stigmas sessile.
 Order PIPERALES. 98
- Flowers axillary : styles present.
 Callitrichaceae in Order GERANIALES. 192
- Seeds numerous in each cavity of the ovary : endosperm wanting.
 Podostemaceae in Order ROSALES. 157
- cc. Flowers monoecious or dioecious. Order GERANIALES. 192
- bb. Trees or shrubs : flowers monoecious or dioecious, or polygamous.
 Fruit 1-seeded : seeds without tufts of hairs.
 Ovules 1 or 2 in each cavity of the ovary : flowers not in heads.
 Pistillate flowers without a calyx : ovule erect and orthotropous.
 Order MYRICALES. 102
- Pistillate flowers with a calyx : ovule pendulous and anatropous.
 Leaf-blades simple.
 Fruit a nut or an achene. Corylaceae in Order FAGALES. 103
 Fruit a drupe. Oleaceae in Order GENTIANALES. 245
 Leaf-blades compound : fruit a samara.
 Oleaceae in Order GENTIANALES. 245
- Ovules many : flowers aggregated into dense heads.
 Hamamelidaceae in Order ROSALES. 157
- Fruit many-seeded : seeds each with a tuft of hairs.
 Order SALICALES. 98
- aa. Calyx present at least in the staminate or the perfect flowers.
 Flowers, at least the staminate, in aments, or ament-like spikes.
 Leaf-blades simple : ovule pendulous and anatropous.
 Pistillate flowers separate at maturity : fruit a nut or an achene.
 Order FAGALES. 103
- Pistillate flowers forming aggregate fruits ; fruit drupe-like.
 Artocarpaceae in Order URTICALES. 108
- Leaf-blades pinnately compound : ovule erect and orthotropous.
 Order JUGLANDALES. 102
- Flowers, at least the staminate, not in aments.
- d. Ovary superior.
 Gynoecium of 1 or several and distinct carpels : stigma and style solitary.
 Carpel solitary.
 Style lateral and oblique.
 Phytolaccaceae in Order CHENOPODIALES. 111
- Style axile, erect.
 Ovary neither enclosed nor seated in a hypanthium or a calyx-tube.
 Flowers not solitary in axils : land plants.
 Order URTICALES. 108
- Flowers solitary in axils : aquatic plants.
 Ceratophyllaceae in Order RANALES. 131
- Ovary enclosed in or seated in a hypanthium or a calyx-tube.
 Stamens borne under the gynoecium.
 Nyctaginiaceae in Order CHENOPODIALES. 118
- Stamens borne on the hypanthium or adnate to the calyx-tube.
 Order THYMELEALES. 219
- Carpels several.

- Stamens inserted below the ovary.
 Families in Order RANALES. 131
- Stamens inserted on the edge of a cup-shaped hypanthium.
 Rosaceae in Order ROSALES. 157
- Gynoecium of 2 or several united carpels: stigmas or styles 2 or several.
- Ovary, by abortion, 1-celled and 1-ovuled.
 Leaves with sheathing stipules (ocreae).
 Order POLYGONALES. 113
- Leaves estipulate, or if stipules are present they are not sheathing.
- Trees or shrubs.
 Anthers opening by slits: ovary not seated in a hypanthium.
 Ulmaceae in Order URTICALES. 108
- Anthers opening by hinged valves: ovary seated in an accrescent hypanthium.
 Lauraceae in Order THYMELEALES. 219
- Herbs or vines.
 Leaves with stipules.
 Stipules herbaceous: inflorescence spicate or racemose: leaf-blades palmately veined.
 Cannabaceae in Order URTICALES. 108
- Stipules scarious or hyaline: inflorescence cymose: leaf-blades pinnately veined.
 Families in Order CHENOPODIALES. 118
- Leaves without stipules.
 Stigmas entire. Order CHENOPODIALES. 118
- Stigmas 2-cleft. Euphorbiaceae in Order GERANIALES. 192
- Ovary several-celled, or with several placentae, several-ovuled.
- Stamens hypogynous, inserted under the gynoecium in the perfect flowers, not on a disk in the pistillate flowers.
- Herbs.
 Flowers perfect.
 Ovary several-celled.
 Fruit baccate or nut-like, or a circumscissile capsule, the carpels terminal on the receptacle.
 Families in Order CHENOPODIALES. 118
- Fruit of several carpels lateral on the receptacle, each carpel circumscissile.
 Penthoraceae in Order ROSALES. 157
- Ovary 1-2-celled.
 Stamens not tetradynamous, 4-8: ovary 1-celled.
 Order CHENOPODIALES. 118
- Stamens tetradynamous: ovary 2-celled.
 Brassicaceae in Order PAPAVERALES. 143
- Flowers monoecious or dioecious.
 Ovules with the raphe towards the axis of the gynoecium.
 Euphorbiaceae in Order GERANIALES. 192
- Ovules with the raphe away from the axis of the gynoecium.
 Buxaceae in Order SAPINDALES. 201
- Trees or shrubs.
 Gynoecium 5-carpellary, the carpels nearly distinct.
 Buettneriaceae in Order MALVALES. 208

- Gynoecium 2-4-carpellary, the carpels united.
 Oleaceae in Order GENTIANALES. 245
- Stamens perigynous or epigynous, inserted on the margin of a hypanthium or a disk.
 Fruit a samara. Families in Order SAPINDALES. 201
 Fruit not a samara.
 Fruit drupe-like or berry-like : shrubs or trees.
 Order RHAMNALES. 206
 Fruit a capsule : herbs. Order ARISTOLOCHIALES. 112
- dd. Ovary inferior.
 Flowers not in involucre heads.
 Fruit a berry or a drupe, or nut-like.
 Stamens as many as the perianth-members and alternate with them, or fewer. Cornaceae in Order UMBELLALES. 225
 Stamens as many as the perianth-members and opposite them, or twice as many.
 Styles present.
 Ovules erect. Order SANTALALES. 111
 Ovules pendulous. Families in Order MYRTALES. 220
 Styles wanting : stigmas sessile.
 Haloragidaceae in Order MYRTALES. 220
- Fruit a capsule.
 Sepals as many as the ovary-cavities or one-half as many.
 Calyx regular and the sepals half as many as the cavities in the ovary, or irregular.
 Order ARISTOLOCHIALES. 112
 Calyx regular and the sepals as many as the cavities in the ovary. Order MYRTALES. 220
 Sepals (4-5) at least twice as many as the ovary-cavities (2).
 Saxifragaceae in Order ROSALES. 157
- Flowers, at least the staminate, in involucre heads.
 Ambrosiaceae in Order CAMPANULALES. 298
- AA. Corolla present.
- e. Petals distinct, at least at the base.
 Carpels solitary, or several and distinct, or united only at the base.
 Stamens at the base of the receptacle, i. e., hypogynous.
 Flowers in monoecious heads. Platanaceae in Order ROSALES. 157
 Flowers not in monoecious heads.
 Plants with relatively firm stems and leaves, not succulents.
 Order RANALES. 131
 Plants with succulent stems and leaves.
 Crassulaceae in Order ROSALES. 157
- Stamens on the margin of a hypanthium (the hypanthium very small in some Saxifragaceae). Order ROSALES. 157
- Carpels several and united.
- f. Ovary superior.
- g. Stamens inserted at the base of the ovary or receptacle.
- h. Stamens numerous.
- i. Sepals imbricated.
 Calyx deciduous. Order PAPAVERALES. 144
 Calyx persistent.
 Styles or stigmas distinct or united, but not discoid.
 Rutaceae in Order GERANIALES. 192

- Styles or stigmas united into a disk.
 Petals and sepals numerous : leaves with flat blades :
 aquatic plants. Nymphaeaceae in Order RANALES. 131
 Petals and sepals few : leaves with pitcher-like organs :
 bog plants.
 Sarraceniaceae in Order SARRACENIALES. 157
- ii. Sepals valvate.
 Stamens with distinct filaments.
 Capparidaceae in Order PAPAVERALES. 143
 Stamens with united filaments. Order MALVALES. 208
- bb. Stamens few, not over twice as many as the petals.
 Stamens as many as the petals and opposite them.
 Anther-sacs opening by hinged valves.
 Berberidaceae in Order RANALES. 131
 Anther-sacs opening by slits.
 Flowers monoecious.
 Euphorbiaceae in Order GERANIALES. 192
 Flowers perfect.
 Stigmas or styles distinct.
 Portulacaceae in Order CHENOPODIALES. 118
 Stigmas or styles wholly united.
 Plumbaginaceae in Order PRIMULALES. 243
- Stamens as many as the petals and alternate with them, or
 more, sometimes twice as many.
 Stamens 6 : petals 4 : sepals 2 or 4.
 Families in Order PAPAVERALES. 143
- Stamens, petals and sepals of the same number, or stamens
 more, usually twice as many as the sepals and petals.
 Ovary 1-celled.
 Ovules, or seeds, on basal or central placentae.
 Families in order CHENOPODIALES. 118
 Ovules, or seeds, on parietal placentae.
 Stigmas 2-cleft.
 Droseraceae in Order SARRACENIALES. 157
 Stigmas entire.
 Stamens with united filaments and no staminodia.
 Families in Order MALVALES. 208
 Stamens with distinct filaments.
 Staminodia present.
 Parnassiaceae in Order ROSALES. 157
 Staminodia wanting.
 Families in Order PARIETALES. 210
- Ovary several-celled.
 Stamens adnate to the gynoecium.
 Asclepiadaceae in Order GENTIANALES. 245
 Stamens not adnate to the gynoecium.
 Stamens with wholly or partly united filaments.
 Anthers opening lengthwise.
 Families in Order GERANIALES. 192
 Anthers opening by pores.
 Polygalaceae in Order GERANIALES. 192
 Stamens with distinct filaments.
 Anthers opening by pores.
 Families in Order ERICALES. 235

- Anthers opening by slits.
 - Stigmas or styles distinct and cleft, or foliaceous, or united by pairs. Order GERANIALES. 192
 - Stigmas or styles all distinct or all united, neither cleft nor foliaceous.
 - Stamens 2. Oleaceae in Order GENTIANALES. 245
 - Stamens more than 2.
 - Leaves with compound blades.
 - Families in Order GERANIALES. 192
 - Leaves with simple blades.
 - Ovule solitary in each carpel.
 - Styles distinct: ovule pendulous.
 - Families in Order GERANIALES. 192
 - Styles united: ovule erect or ascending.
 - Limnanthaceae in Order SAPINDALES. 201
 - Ovules 2 or more in each carpel.
 - Flowers irregular: stamens united at the top or converging.
 - Placentae axile.
 - Balsaminaceae in Order GERANIALES. 192
 - Placentae parietal.
 - Violaceae in Order PARIETALES. 210
 - Flowers regular: stamens neither united nor converging at the top.
 - Carpels not circumscissile at maturity.
 - Placentae parietal.
 - Cistaceae in Order PARIETALES. 210
 - Placentae axile or central.
 - Styles distinct.
 - Elatinaceae in Order PARIETALES. 210
 - Styles united.
 - Tiliaceae in Order MALVALES. 208
 - Carpels circumscissile at maturity.
 - Penthoraceae in Order ROSALES. 157
 - gg. Stamens inserted on the margin of a disk or hypanthium (perigynous or hypogynous).
 - Stamens as many as the petals and opposite them.
 - Styles and upper part of the ovaries distinct: ovules and seeds many.
 - Saxifragaceae in Order ROSALES. 157
 - Styles united.
 - Order RHAMNALES. 206
 - Stamens as many as the petals and alternate with them, or more or many.
 - Styles distinct.
 - Upper part of the ovaries distinct, at least at maturity.
 - Saxifragaceae and Iteaceae in Order ROSALES. 157
 - Upper part of the ovaries united.
 - Order SAPINDALES. 201
 - Styles united.
 - Hypanthium flat or obsolete: disk fleshy.
 - Plants without oil-glands in the bark.
 - Order SAPINDALES. 201
 - Plants with oil-glands in the bark.
 - Families in Order GERANIALES. 192

- Hypanthium cup-shaped or campanulate : disk obsolete or inconspicuous. Order MYRTALES. 220
- ff. Ovary inferior.
- j. Stamens numerous.
- Styles and stigmas united into a disk : water-plants with endogenous stems. Nymphaeaceae in Order ROSALES. 157
- Styles distinct, or united, but not forming a disk with radiating stigmas : land-plants with exogenous stems.
- Styles distinct. Families in Order ROSALES. 157
- Styles united.
- Shrubs or trees ; not succulents, sometimes woody vines.
- Hypanthium not produced beyond the ovary.
- Hydrangeaceae in Order ROSALES. 157
- Hypanthium produced beyond the ovary.
- Families in Order MYRTALES. 220
- Herbs, or shrub-like or tree-like, succulents.
- Order OPUNTIALES. 219
- jj. Stamens not more than twice as many as the petals.
- Styles wanting : stigmas sessile.
- Haloragidaceae in Order MYRTALES. 220
- Styles present.
- Styles distinct.
- Ovules several in each cavity of the ovary : fruit a capsule or a fleshy many-seeded berry.
- Fruit, if dehiscent, valvate. Families in Order ROSALES. 157
- Fruit circumscissile.
- Portulacaceae in Order CHENOPODIALES. 118
- Ovules solitary in each cavity of the ovary : fruit a drupe or 2-5 more or less united achenes. Order UMBELLALES. 225
- Styles united, or single.
- Plants without tendrils.
- Ovary enclosed in or surpassed by the hypanthium, or adnate to it.
- Anther-sacs opening by pores.
- Vacciniaceae in Order ERICALES. 235
- Anther-sacs opening by slits.
- Ovule solitary in each cavity of the ovary.
- Order UMBELLALES. 225
- Ovules several in each cavity.
- Families in Order MYRTALES. 220
- Ovary exceeding the hypanthium, the top free.
- Hydrangeaceae in Order ROSALES. 157
- Plants with tendrils.
- Herbs : fruit a pepo : leaf-blades palmately veined.
- Cucurbitaceae in Order CAMPANULALES. 298
- Shrubby vines : fruit drupaceous, separating into nutlets : leaf-blades pinnately veined.
- Rhamnaceae in Order RHAMNALES. 206
- ee. Petals more or less united.
- k. Ovary superior.
- l. Stamens free from the corolla.
- Gynoecium of a single carpel. Families in Order ROSALES. 157

- Gynoecium of several united carpels.
 m. Filaments united.
 Stamens diadelphous. Fumariaceae in Order PAPAVERALES. 144
 Stamens monadelphous.
 Anther-sacs opening by slits. Oxalidaceae in Order GERANIALES. 192
 Anther-sacs opening by pores.
 Calyx and corolla very irregular. Polygalaceae in Order GERANIALES. 192
 Calyx and corolla regular. Families in Order ERICALES 235
 mm. Filaments distinct.
 Styles wanting or very short: stigmas sessile. Ilicaceae in Order SAPINDALES. 201
 Styles elongated. Families in Order ERICALES. 235
 11. Stamens partially adnate to the corolla.
 Stamens as many as the lobes of the corolla and opposite them,
 or twice as many more. Order PRIMULALES. 243
 Ovary 1-celled.
 Ovary several-celled.
 Upper portion of the ovaries distinct. Crassulaceae in Order ROSALES. 157
 Upper portion of the ovaries united. Order EBENALES. 245
 Stamens as many as the lobes of the corolla and alternate with
 them, or fewer.
 Corolla not scarious, veiny: fruit various, but not a pyxis.
 Gynoecium of 3-6 carpels.
 Shrubs or trees: ovules and seeds few. Ilicaceae in Order SAPINDALES. 201
 Herbs, or creeping or tufted shrubby plants: ovules and
 seeds numerous. Families in Order POLEMONIALES. 252
 Gynoecium of 2 carpels.
 Carpels distinct, except sometimes at the apex. Families in Order GENTIANALES. 245
 Carpels united.
 Ovary 1-celled, with central placentae. Order GENTIANALES. 245
 Ovary 2-celled, or falsely 4-celled, or if 1-celled with parietal
 placentae.
 Stamens 2 and opposite each other, or 3. Order GENTIANALES. 245
 Stamens usually 4 or 5, if 2 by reduction not opposite
 each other.
 Leaves with stipules or stipular lines at their bases. Spigeliaceae in Order GENTIANALES. 245
 Leaves with no traces of stipules. Order POLEMONIALES. 252
 Corolla scarious, veinless: fruit a pyxis. Order PLANTAGINALES. 288
 kk. Ovary inferior.
 Stamens with the filaments free from the corolla.
 Stamens 10: anther-sacs opening by terminal pores or chinks. Vacciniaceae in Order ERICALES. 235

- Stamens 5 or fewer : anther-sacs opening by longitudinal slits.
 Order CAMPANULALES. 298
- Stamens adnate to the corolla.
- n. Ovary with 2-many fertile cavities and 2-many ovules : calyx unmodified, at least not a pappus.
 Plants tendril-bearing.
 Cucurbitaceae in Order CAMPANULALES. 298
- Plants not tendril-bearing.
 Ovules mainly pendulous from a basal placenta : plants parasitic.
 Order SANTALALES. 111
- Ovules variously borne, but not pendulous from a basal placenta : plants not parasitic.
 Order RUBIALES. 289
- nn. Ovary with one fertile cavity.
 Ovules numerous on a basal placenta.
 Primulaceae in Order PRIMULALES. 243
- Ovule solitary, the placentae not basal.
 Flowers not in heads, often in head-like spikes or racemes.
 Order VALERIANALES. 297
- Flowers in involucrate heads.
 Families in Order CAMPANULALES. 298

FLORA OF PENNSYLVANIA

Subkingdom SPERMATOPHYTA

SEED-BEARING PLANTS

Ovules and seeds borne on the face of a bract or a scale : stigma wanting.

Class 1. GYMNOSPERMAE.

Ovules and seeds borne in a closed cavity (ovary) : stigma present.

Class 2. ANGIOSPERMAE.

CLASS I. GYMNOSPERMAE.

Order 1. PINALES.

Pistillate flowers several, with carpellary scales, these sometimes bracted : fruit a cone, either dry or berry-like.

Fam. 1. PINACEAE.

Pistillate flowers solitary, without carpellary scales : fruit drupaceous or baccate.

Fam. 2. TAXACEAE.

FAMILY I. PINACEAE Lindl. PINE FAMILY.

Carpellary scales with bracts : ovules inverted : buds scaly : wing accompanying the seed a portion of the carpellary scale.

Leaves several together, surrounded by a sheath at the base : cones maturing the second year.

1. PINUS.

Leaves solitary or clustered, without sheaths : cones maturing the first year.

Cones drooping : bracts shorter than the scales.

Leaves 4-sided, spreading : anther-sacs opening lengthwise.

2. PICEA.

Leaves flat, apparently 2-ranked : anther-sacs opening transversely.

3. TSUGA.

Cones erect or spreading : bracts longer than the scales.

Leaves persistent, solitary : cone-scales deciduous.

4. ABIES.

Leaves deciduous, clustered : cone-scales persistent.

5. LARIX.

Carpellary scales without bracts : ovules erect : buds naked : wing of the seed, when present, part of the testa.

Plants monoecious : cones with dry merely imbricated scales.

Cones elongated : scales not peltate : seeds winged at both ends.

6. THUJA.

Cones nearly globose : scales peltate : seeds slightly winged.

7. CHAMAECYPARIS.

Plants dioecious : cones with fleshy and coalescent scales.

8. JUNIPERUS.

1. PINUS L.

A. Cone-scales with inconspicuous terminal unarmed appendages : leaves in 5's.

1. *P. Strobus*.

B. Cone-scales with dorsal usually spine-armed appendages : leaves mostly in 2's or 3's.

Leaves 2 together in each sheath.

Appendages of the cone-scales with obsolete spines : bark smooth except when old. 2. *P. resinosa*.

Appendages of the cone-scales with well-developed spines : bark rough or furrowed

Cones 4-7 cm. long, slender, conic.

Leaf-sheaths over 1 cm. long.

3. *P. echinata*.

Leaf-sheaths less than 1 cm. long.

4. *P. Virginiana*.

Cones 10-13 cm. long : stout, ovoid.

5. *P. pungens*.

Leaves 3 together in each sheath.

Cones narrow, conic, much longer than thick.

3. *P. echinata*.

Cones ovoid, globose or depressed when old.

Upper cone-scales with incurved spines, the lower with recurved : base of cone rounded.

5. *P. pungens*.

Upper and lower cone-scales with straight spines : base of cone flat.

6. *P. rigida*.

1. *Pinus Strobus* L. WHITE PINE. (Man. p. 31 ; I. F. f. 110.) Often forming dense forests, or scattered in rocky soil, Newf. to Man., Ga., Ind. and Ia.—*Pennsylvania* : CHESTER ; LANCASTER ; BLAIR ; HUNTINGDON ; MONTGOMERY ; ERIE ; TIOGA ; DELAWARE ; LUZERNE ; YORK ; ALLEGHENY. Common in the mountainous regions.

2. *Pinus resinosa* Ait. RED PINE. (Man. p. 31 ; I. F. f. 111.) In woods, Newf. to Man., Mass., Pa. and Minn.—*Pennsylvania* : HUNTINGDON ; LUZERNE ; WAYNE.

3. *Pinus echinata* Mill. YELLOW PINE. (Man. p. 32 ; I. F. f. 116.) In sandy soil, N. Y. to Kans., Fla. and Tex.—*Pennsylvania* : LANCASTER, Manheim ; COLUMBIA, Berwick.

4. *Pinus Virginiana* Mill. JERSEY PINE. (Man. p. 32 ; I. F. f. 115.) In sandy soil, N. Y. to Ind., Ga. and Ala.—*Pennsylvania* : NORTHAMPTON ; LANCASTER ; FRANKLIN ; YORK ; ALLEGHENY.

5. *Pinus pungens* Michx. f. TABLE MOUNTAIN PINE. (Man. p. 32 ; I. F. f. 117.) In rocky soil, N. J. to Pa., Ga. and Tenn.—*Pennsylvania* : BLAIR ; HUNTINGDON ; MIFFLIN ; FRANKLIN ; LANCASTER ; SCHUYLKILL ; YORK.

6. *Pinus rigida* Mill. PITCH PINE. (Man. p. 33 ; I. F. f. 119.) In dry sandy or rocky soil, N. B. to Ont., Ga. and Tenn.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; CHESTER ; LANCASTER ; MONROE ; HUNTINGDON ; FRANKLIN ; TIOGA ; LUZERNE, SCHUYLKILL ; DELAWARE ; YORK.

2. PICEA Link.

Leaves merely green : sterigmata pubescent.

1. *P. Mariana*.

Leaves glaucous : sterigmata glabrous.

2. *P. brevifolia*.

1. *Picea Mariana* (Mill.) B.S.P. BLACK SPRUCE. (Man. p. 34 ; I. F. f. 122.) In rocky or stony soil, Newf. to the N. W. Terr., N. J. and Minn., and in the mountains to N. C.—*Pennsylvania* : MONROE ; CENTRE ; CAMBRIA ; LACKAWANNA.

2. *Picea brevifolia* Peck. (Man. p. 34; I. F. f. 122^a.) PALE SPRUCE. In deep forests, swamps and bogs, Ont. to Mich., Vt. and Pa.—*Pennsylvania*: MONROE; PIKE.

3. *TSUGA* Carr.

1. *Tsuga Canadensis* (L.) Carr. HEMLOCK. (Man. p. 34; I. F. f. 124.) In stony or rocky soil, N. S. to Minn., Del., Ga., Ala. and Wis.—*Pennsylvania*: MONROE; NORTHAMPTON; SCHUYLKILL; HUNTINGDON; DELAWARE; FRANKLIN; CHESTER; LANCASTER; LACKAWANNA; TIOGA; YORK; ALLEGHENY. Common throughout the State.

4. *ABIES* Mill.

1. *Abies balsamea* (L.) Mill. BALSAM FIR. (Man. p. 35; I. F. f. 126.) At high altitudes southward, Newf. and Lab. to the N. W. Terr., Mass., Pa., Va. (in the mountains) and Minn.—*Pennsylvania*: MONROE; CENTRE, Bear Meadows; SULLIVAN.

5. *LARIX* Adans.

1. *Larix laricina* (Du Roi) Koch. TAMARACK. (Man. p. 33; I. F. f. 120.) In swampy woods and in lake regions, Newf. to the N. W. Terr., N. J., Ind. and Minn.—*Pennsylvania*: MONROE; CENTRE, Bear Meadows; CARBON; LACKAWANNA; PIKE.

6. *THUJA* L.

1. *Thuja occidentalis* L. WHITE CEDAR. (Man. p. 36; I. F. f. 129.) In wet soil and on river banks, N. B. to Man., N. J. along the mountains to N. C., Ill. and Minn.—*Pennsylvania*: Generally escaped from cultivation, but not definitely known in the native state.

7. *CHAMAECYPARIS* Spach.

1. *Chamaecyparis thyoides* (L.) B.S.P. SOUTHERN WHITE CEDAR. (Man. p. 36; I. F. f. 130.) In swamps, mostly near the coast, Mass. to Fla. and Miss.—*Pennsylvania*: BUCKS, Bristol.

8. *JUNIPERUS* L.

Leaves subulate, spreading on the mature branches: aments axillary; pistillate with smaller scales at the top. 1. *J. communis*.

Leaves scale-like, appressed on the mature branches: aments terminal; pistillate with larger scales at the top. 2. *J. Virginiana*.

1. *Juniperus communis* L. JUNIPER. (Man. p. 36; I. F. f. 131.) On dry hills N. S. to Br. Col., N. C., Neb. and N. Mex.—*Pennsylvania*: MONROE; CHESTER; LANCASTER; LEBANON; DELAWARE; BUCKS.

2. *Juniperus Virginiana* L. RED CEDAR. (Man. p. 37; I. F. f. 133.) In dry soil or swamps, N. B. to Br. Col., Fla., Tex. and Mex. *Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LANCASTER; HUNTINGDON; MONTGOMERY; CHESTER; FRANKLIN; ALLEGHENY. Common.

FAMILY 2. **TAXACEAE** Lindl. YEW FAMILY.1. **TAXUS** L.

1. **Taxus Canadensis** Marsh. AMERICAN YEW. GROUND HEMLOCK. (Man. p. 37; I. F. f. 135). In rocky woods, Newf. to Man., N. J., Va. and Ia.—*Pennsylvania*: MONROE; WAYNE; SUSQUEHANNA; BUCKS; LYCOMING; CENTRE; ERIE; SOMERSET; CHESTER, Black Rock; BLAIR; HUNTINGDON; TIOGA.

CLASS 2. **ANGIOSPERMAE.**

Cotyledon 1: stem endogenous.

Subclass 1. MONOCOTYLEDONES.

Cotyledons normally 2: stem exogenous, with rare exceptions.

Subclass 2. DICOTYLEDONES.

Subclass 1. **MONOCOTYLEDONES.**Order 1. **PANDANALES.**

Flowers in elongated spikes: perianth of bristles: gynoeceium stalked.

Fam. 1. TYPHACEAE.

Flowers in globose spikes: perianth of scales: gynoeceium sessile.

Fam. 2. SPARGANIACEAE.

FAMILY 1. **TYPHACEAE** J. St. Hil. CAT-TAIL FAMILY.1. **TYPHA** L.

Spikes with the pistillate and staminate portions contiguous; pistillate without bractlets: stigmas club-shaped or rhomboidal: pollen-grains in 4's.

1. *T. latifolia*.

Spikes with the pistillate and staminate portions separated; pistillate with bractlets: stigmas linear: pollen-grains simple.

2. *T. angustifolia*.

1. **Typha latifolia** L. BROAD-LEAVED CAT-TAIL. (Man. p. 39; I. F. f. 136.) In marshes, throughout N. A., except the extreme north. Also in Eu. and Asia.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LEHIGH; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; ALLEGHENY. Common throughout.

2. **Typha angustifolia** L. NARROW-LEAVED CAT-TAIL. (Man. p. 39; I. F. f. 137.) In marshes, mainly along the coast, N. S. to Fla. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; PHILADELPHIA; LEHIGH; DELAWARE.

FAMILY 2. **SPARGANIACEAE** Agardh. BUR-REED FAMILY.1. **SPARGANIUM** L.

Fruit sessile, obovoid or cuneate.

1. *S. eurycarpum*.

Fruit stipitate, fusiform or oblong.

Inflorescence branching and compound.

2. *S. androcladum*.

Inflorescence simple, or the lower spikes merely peduncled.

A. Pistillate spikes or some of the lower ones peduncled: upper leaves with sac-like bases and scarious margins.

3. *S. Americanum*.

B. Pistillate spikes sessile: upper leaves not sac-like at the base nor scarious-margined.

Pistillate spikes 10-16 mm. in diameter: staminate spikes 4-6.

4. *S. simplex*.

Pistillate spikes 4-10 mm. in diameter: staminate spikes 1-2.

5. *S. minimum*.

1. *Sparganium eurycarpum* Engelm. BROAD-FRUITED BUR-REED. (Man. p. 39; I. F. f. 138.) In marshes and along streams, Newf. to Br. Col., N. C., Mo. and Calif.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DELAWARE.

2. *Sparganium androcladum* (Engelm.) Morong. BRANCHING BUR-REED. (Man. p. 39; I. F. f. 139.) In swamps or shallow water, N. S. to Br. Col., Fla. and La.—*Pennsylvania*: NORTHAMPTON; CHESTER; LANCASTER; DELAWARE; FRANKLIN; HUNTINGDON; BUCKS; BEDFORD; ERIE; JEFFERSON.

2a. *S. androcladum fluctuans* Morong. (Man. p. 40.)—MONROE; SUSQUEHANNA; WAYNE; CENTRE, Bear Meadows; SCHUYLKILL; SOMERSET; FRANKLIN.

3. *Sparganium Americanum* Nutt. AMERICAN BUR-REED. (Man. p. 1038.) In low grounds or ponds, Ont. to Br. Col., Pa. and the Ind. Terr.—*Pennsylvania*: PHILADELPHIA.

4. *Sparganium simplex* Huds. SIMPLE-STEMMED BUR-REED. (Man. p. 40; I. F. f. 140.) Along streams and ponds, Newf. to Br. Col., Pa., Mont. and Calif.—*Pennsylvania*: SUSQUEHANNA; MONROE; SOMERSET.

5. *Sparganium minimum* Fries. SMALL BUR-REED. (Man. p. 40; I. F. f. 141.) In ponds and streams, N. B. to Man., Ore., N. J., Mich. and Utah.—*Pennsylvania*: TIOGA; ERIE, Presque Isle.

Order 2. NAIADALES.

Gynoeceum of distinct carpels: stigmas disk-like or cup-like.

Fam. 1. ZANNICHELLIACEAE.

Gynoeceum of united carpels: stigmas 2-4, slender.

Fam. 2. NAIADACEAE.

FAMILY I. ZANNICHELLIACEAE Dumort. PONDWEED FAMILY.

Flowers monoecious: stamen 1; connective without an appendage: drupelets stipitate.

1. ZANNICHELLIA.

Flowers perfect: stamens 4; connectives with broad appendages: drupelets sessile.

2. POTAMOGETON.

1. ZANNICHELLIA L.

1. *Zannichellia palustris* L. ZANNICHELLIA. (Man. p. 50; I. F. f. 178.) In fresh or brackish ponds, pools or ditches, nearly throughout N. A.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; CHESTER; LUZERNE.

2. POTAMOGETON L.

A. Stipules axillary and free from the rest of the leaf.

a. Plants with both submerged and floating leaves.

- Submerged leaves without blades.
 Drupelets barely keeled : nutlets pitted. 1. *P. natans*.
 Drupelets 3-keeled : nutlets not pitted. 2. *P. Oakesianus*.
- Submerged leaves with flat blades.
 Submerged leaves of 2 kinds, some with narrow blades, others with broad blades.
 Upper submerged leaves with broad blades ; lower with narrow blades. 3. *P. amplifolius*.
 Upper submerged leaves with narrow blades ; lower with broad blades. 4. *P. pulcher*.
- Submerged leaves all alike
 Blades of the submerged leaves linear or nearly so throughout.
 Blades the same breadth throughout, coarsely cellular-reticulated in the middle. 5. *P. Nuttallii*.
 Blades dilated at the base, without cellular reticulation. 8. *P. heterophyllus*.
- Blades of the submerged leaves lanceolate.
 Leaves with petioled blades or the lower sometimes sessile.
 Upper leaves with petioled blades, the lower blades sessile. 6. *P. alpinus*.
 All the leaves with petioled blades. 7. *P. lonchites*.
 Leaves with sessile or subsessile blades. 9. *P. Zizii*.
- b. Plants with submerged leaves only.
 Plants without propagative buds and without glands.
 Leaf-blades several-many-nerved :
 Blades relatively broad, lanceolate to ovate, many-nerved.
 Leaf-blades sessile or nearly so, acute or cuspidate. 10. *P. lucens*.
 Leaf-blades meeting around the stem, obtuse. 11. *P. perfoliatus*.
 Blades relatively narrow, linear to oblong-linear, several-nerved. 15. *P. foliosus*.
 Leaf-blades capillary or setaceous, 1-nerved or nerveless. 12. *P. confervoides*.
- Plants with either propagative buds or glands, or both.
 Propagative buds present : glands wanting.
 Leaf-blades 3-7-nerved, serrulate. 13. *P. crispus*.
 Leaf-blades with 3 main nerves and many delicate ones, entire. 14. *P. zosteraefolius*.
- Propagative buds and glands both present.
 Glands large and translucent : buds rare. 16. *P. obtusifolius*.
 Glands small, often dull : buds common. 17. *P. pusillus*.
- B. Stipules adnate to the leaf-blade or petiole.
 Plants with both submerged and floating leaves.
 Submerged peduncles as long as the spikes, clavate, often recurved. 18. *P. diversifolius*.
 Submerged spikes sessile or nearly so. 19. *P. Spirillus*.
- Plants with submerged leaves only.
 Drupelets not keeled or only obscurely so : leaf-blades setaceous. 20. *P. pectinatus*.
 Drupelets strongly 3-keeled : leaf-blades linear. 21. *P. Robbinsii*.

1. *Potamogeton natans* L. COMMON FLOATING PONDWEED. (Man. p. 42 ; I. F. f. 142.) In ponds and streams, nearly throughout N. A.

Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; HUNTINGDON, Juniata River; LANCASTER; ERIE.

2. *Potamogeton Oakesianus* Robbins. OAKES' PONDWEED. (Man. p. 42; I. F. f. 143.) In still water, Anticosti to N. J. and Pa.—*Pennsylvania*: MONROE, Pocono Plateau.

3. *Potamogeton amplifolius* Tuckerm. LARGE-LEAVED PONDWEED. (Man. p. 43; I. F. f. 144.) In lakes and ponds, Ont. to Br. Col., Conn., Ky. and Neb.—*Pennsylvania*: NORTHAMPTON; LEHIGH; BUCKS, Bristol.

4. *Potamogeton pulcher* Tuckerm. SPOTTED PONDWEED. (Man. p. 43; I. F. f. 145.) In slow streams or ponds, Me. to Mo. and Ga.—*Pennsylvania*: NORTHAMPTON; LEHIGH; BUCKS, Bristol; FRANKLIN, Mercersburg.

5. *Potamogeton Nuttallii* Cham. & Schlecht. NUTTALL'S PONDWEED. (Man. p. 43; I. F. f. 146.) In ponds and streams, N. S. to Pa. and S. C.—*Pennsylvania*: MONROE, Tobyhanna; NORTHAMPTON, Easton; CHESTER, Oxford; LANCASTER; CLINTON, Beaver Meadows; LYCOMING, Susquehanna River; WARREN; CENTRE, Bear Meadows; ERIE.

6. *Potamogeton alpinus* Balbis. NORTHERN PONDWEED. (Man. p. 43; I. F. f. 147.) In ponds, N. S. to Br. Col., N. J. and Calif. Also in Eu.—*Pennsylvania*: LYCOMING, Susquehanna River; HUNTINGDON, Little Juniata River; LANCASTER, Susquehanna River.

7. *Potamogeton lonchites* Tuckerm. LONG-LEAVED PONDWEED. (Man. p. 43; I. F. f. 148.) In ponds and slow streams, N. B. to Wash., Fla. and Calif.—*Pennsylvania*: NORTHAMPTON, Easton; LYCOMING; DELAWARE; LANCASTER, Safe Harbor; DAUPHIN, Harrisburg; HUNTINGDON, Alexandria.

8. *Potamogeton heterophyllus* Schreb. VARIOUS-LEAVED PONDWEED. (Man. p. 44; I. F. f. 150.) In still or flowing water, nearly throughout N. A. Also in Eu.—*Pennsylvania*: YORK, McCall's Ferry; LANCASTER; ERIE.

8a. *P. heterophyllus graminifolius* (Fries) Morong. (Man. p. 44.)—With the type. ERIE, Presque Isle.

9. *Potamogeton Zizii* Roth. ZIZ'S PONDWEED. (Man. p. 44; I. F. f. 153.) In lakes and streams, Quebec to Mont., Fla. and Wyo. Also in Eu.—*Pennsylvania*: CRAWFORD; ERIE, Presque Isle.

10. *Potamogeton lucens* L. SHINING PONDWEED. (Man. p. 45; I. F. f. 154.) In ponds, N. S. to Calif., Fla. and Mex. Also in Eu.—*Pennsylvania*: Specimens apparently referable to this species have been collected in the Susquehanna and Delaware Rivers.

11. *Potamogeton perfoliatus* L. CLASPING-LEAVED PONDWEED. (Man. p. 45; I. F. f. 156.) In ponds and streams, Newf. to Br. Col., Fla. and Calif. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON, Delaware River; DELAWARE; LANCASTER, Susquehanna River; DAUPHIN, Susquehanna River; LYCOMING, Susquehanna River; HUNTINGDON, Juniata River.

11a. *P. perfoliatus Richardsonii* A. Bennett. (Man. p. 45.)—NORTHAMPTON, Easton.

12. *Potamogeton confervoides* Reichenb. ALGA-LIKE PONDWEED. (Man. p. 45; I. F. f. 158.) In cold mountain ponds, Me. and N. H. to N. J. and Pa.—*Pennsylvania*: CARBON, Great Lake; HUNTINGDON, Alexandria.

13. *Potamogeton crispus* L. CURLED-LEAVED PONDWEED. (Man. p. 46; I. F. f. 159.) In fresh, brackish, or even salt water, Mass. to Pa. and Va.—*Pennsylvania*: LANCASTER, Conestoga Creek; NORTHAMPTON, Lehigh River and Bushkill Creek; HUNTINGDON; ALLEGHENY; ERIE.

14. *Potamogeton zosteræifolius* Schum. EEL-GRASS PONDWEED. (Man. p. 46; I. F. f. 160.) In still or flowing water, N. B. to Ore., N. J. and Pa.—*Pennsylvania*: LANCASTER, Susquehanna River.

15. *Potamogeton foliosus* Raf. LEAFY PONDWEED. (Man. p. 46; I. F. f. 162.) In ponds and streams, N. B. to Br. Col., Fla. and Calif.—*Pennsylvania*: ERIE, Presque Isle.

15a. *P. foliosus Niagarensis* (Tuckerm.) Morong. (Man. p. 46.)—ERIE, Presque Isle.

16. *Potamogeton obtusifolius* Mert. & Koch. BLUNT-LEAVED PONDWEED. (Man. p. 46; I. F. f. 163.) In still water, Quebec to Minn., Wyo. and Pa.—*Pennsylvania*: NORTHAMPTON, Easton; LANCASTER; WAYNE.

17. *Potamogeton pusillus* L. SMALL PONDWEED. (Man. p. 47; I. F. f. 168.) In ponds and slow streams, N. B. to Br. Col., Va., Tex. and Calif.—*Pennsylvania*: MONROE; LANCASTER.

18. *Potamogeton diversifolius* Raf. RAFINESQUE'S PONDWEED. (Man. p. 48; I. F. f. 170.) In still water, Me. to Neb., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; CHESTER; LANCASTER; YORK; FRANKLIN; HUNTINGDON.

18a. *P. diversifolius multidenticulatus* Morong. (Man. p. 48.)—NORTHAMPTON, Easton (according to Morong).

19. *Potamogeton Spirillus* Tuckerm. SPIRAL PONDWEED. (Man. p. 48; I. F. f. 171.) In ponds and ditches, N. S. to Minn., Va. and Neb.—*Pennsylvania*: BUCKS.

20. *Potamogeton pectinatus* L. FENNEL-LEAVED PONDWEED. (Man. p. 49; I. F. f. 173.) In fresh, brackish or salt water, C. Breton to Br. Col., Fla., Tex. and Calif.—*Pennsylvania*: NORTHAMPTON, Black Horse Tavern; DAUPHIN; LANCASTER, Safe Harbor; ERIE.

21. *Potamogeton Robbinsii* Oakes. ROBBINS' PONDWEED. (Man. p. 49; I. F. f. 175.) In ponds and lakes, N. B. to Ore., N. J., Pa. and Mich.—*Pennsylvania*: NORTHAMPTON, Lehigh River; LANCASTER, Susquehanna River; ERIE.

FAMILY 2. NAIADACEAE Lindl. NAIAS FAMILY.

1. NAIAS L.

Leaf-blades linear: leaf-sheaths narrowly and obliquely rounded.

1. *N. flexilis*.

Leaf-blades filiform: leaf-sheaths auricled.

2. *N. gracillima*.

1. *Najas flexilis* (Willd.) Rost. & Schmidt. **SLENDER NAIAS.** (Man. p. 51; I. F. f. 180.) In ponds and streams, nearly throughout N. A.—*Pennsylvania*: NORTHAMPTON; DELAWARE; LANCASTER; HUNTINGDON; CHESTER.

2. *Najas gracillima* (A. Br.) Morong. **THREAD-LIKE NAIAS.** (Man. p. 51; I. F. f. 182.) In ponds and pools, Mass. to Del. and Mo.—*Pennsylvania*: BUCKS, Bristol.

Order 3. ALISMALES.

Petals nearly similar to the sepals: anthers long and narrow: carpels coherent.

Fam. 1. SCHEUCHZERIAACEAE.

Petals very different from the sepals: anthers short and thick: carpels not coherent.

Fam. 2. ALISMACEAE.

FAMILY 1. SCHEUCHZERIAACEAE Agardh. **ARROW-GRASS FAMILY.**

Plants scapose: flowers many in an elongated spike or spike-like raceme.

1. TRIGLOCHIN.

Plants caulescent: flowers few in a short, loose raceme. 2. SCHEUCHZERIA.

1. TRIGLOCHIN L.

1. *Triglochin maritima* L. **SEASIDE ARROW-GRASS.** (Man. p. 53; I. F. f. 186.) In bogs, or salt marshes, Lab. to N. J., Alaska and Calif.—*Pennsylvania*: ERIE, Presque Isle.

2. SCHEUCHZERIA L.

1. *Scheuchzeria palustris* L. **SCHEUCHZERIA.** (Man. p. 53; I. F. f. 187.) In bogs, Lab. to Br. Col., N. J., Wisc. and Calif.—*Pennsylvania*: PIKE; MONROE; WAYNE; CARBON; TIOGA; LYCOMING.

FAMILY 2. ALISMACEAE DC. **WATER-PLANTAIN FAMILY.**

Carpels in a ring on a flat receptacle.

1. ALISMA.

Carpels crowded in many series on a convex or globose receptacle.

2. SAGITTARIA.

1. ALISMA L.

1. *Alisma Plantago-aquatica* L. **WATER PLANTAIN.** (Man. p. 54; I. F. f. 188.) In mud or shallow water, nearly throughout N. A.—*Pennsylvania*: MONROE, Pocono; NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; ALLEGHENY; FRANKLIN; ERIE.

2. SAGITTARIA L.

A. Pedicels of the pistillate flowers slender, ascending, not reflexed.

a. Leaf-blades sagittate.

Beak of the achene erect, the tip sometimes recurved.

Pedicels of the pistillate flowers shorter than their bracts.

1. *S. longirostra*.

Pedicels of the pistillate flowers longer than their bracts.

2. *S. Engelmanniana*.

Beak of the achene lateral, horizontal, or oblique. 3. *S. latifolia*.

b. Leaf-blades entire, rarely cordate.

Filaments slender: leaf-blades seemingly pinnately veined.

4. *S. rigida*.

Filaments dilated: leaf-blades with veins distinct to the base.

5. *S. graminea*.

B. Pedicels of the pistillate flowers stout, reflexed at maturity.

6. *S. subulata*.

1. *Sagittaria longirostra* (Michx.) J. G. Smith. LONG-BEAKED ARROW-HEAD. (Man. p. 57; I. F. f. 193.) In swamps and along ponds. N. J. and Pa. to Ala.—*Pennsylvania*: LANCASTER; DELAWARE.

2. *Sagittaria Engelmanniana* J. G. Smith. ENGELMANN'S ARROW-HEAD. (Man. p. 57; I. F. f. 194.) In shallow water, Mass. to Pa. and Del.—*Pennsylvania*: MONROE, Tobyhanna; NORTHAMPTON; LUZERNE; PHILADELPHIA.

3. *Sagittaria latifolia* Willd. BROAD-LEAVED ARROW-HEAD. (Man. p. 57; I. F. f. 195.) In low grounds and shallow water, nearly throughout N. A.—*Pennsylvania*: MONROE; NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; FRANKLIN; ERIE; ALLEGHENY. Common.

3a. *S. latifolia pubescens* (Muhl.) J. G. Smith. (Man. p. 57.)—NORTHAMPTON, Seidersville.

4. *Sagittaria rigida* Pursh. SESSILE-FRUITING ARROW-HEAD. (Man. p. 58; I. F. f. 201.) In shallow water and swamps, Quebec to Minn., N. J., Tenn. and Neb.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; LANCASTER; DAUPHIN, Harrisburg; BRADFORD.

5. *Sagittaria graminea* Michx. GRASS-LEAVED SAGITTARIA. (Man. p. 59; I. F. f. 204.) In shallow water or mud, Newf. to S. Dak., Fla. and Tex.—*Pennsylvania*: PIKE, Twelve Mile Pond; NORTHAMPTON; DELAWARE; BERKS; ERIE.

6. *Sagittaria subulata* (L.) Buchenau. SUBULATE SAGITTARIA. (Man. p. 59; I. F. f. 206.) In tidewater mud, N. Y. to Pa., Fla. and Ala.—*Pennsylvania*: PHILADELPHIA; DELAWARE.

6a. *S. subulata gracillima* (S. Wats.) J. G. Smith. (Man. p. 59.)—BUCKS, Bristol.

Order 4. HYDROCHARITALES.

FAMILY I. ELODIACEAE Dumort. TAPE-GRASS FAMILY.

Staminate flowers with 9 stamens.

1. PHILOTRIA.

Staminate flowers with 1-3 stamens.

2. VALLISNERIA.

1. PHILOTRIA Raf.

Leaf-blades oblong, elliptic or ovate-oblong.

1. *P. Canadensis*.

Leaf-blades narrowly linear.

2. *P. angustifolia*.

1. *Philotria Canadensis* (Michx.) Britton. WATER-WEED. DITCH-MOSS. (Man. p. 60.) In ponds and streams, nearly throughout N. A.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; LYCOMING; HUNTINGDON; ERIE.

2. *Philotria angustifolia* Muhl. SLENDER WATER-WEED. (Man. p. 60; I. F. f. 207.) In shallow water, northeastern N. A.—*Pennsylvania*: BUCKS, Pt. Pleasant.

2. VALLISNERIA L.

1. *Vallisneria spiralis* L. TAPE-GRASS. EEL-GRASS. (Man. p. 60; I. F. f. 208.) In quiet waters, N. B. to Minn., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; ALLEGHENY; ERIE.

Order 5. GRAMINALES.

Leaves 2-ranked, their sheaths with ununited margins: stems mostly hollow: fruit a caryopsis. Fam. 1. GRAMINEAE.

Leaves 3-ranked, their sheaths with united margins: stems mostly solid: fruit an achene. Fam. 2. CYPERACEAE.

FAMILY I. GRAMINEAE Juss. GRASS FAMILY.

- I. Spikelets falling from the pedicel entire (see also nos. 25, 27, 33, and 41 of section B), naked, or enclosed in bristles or a bur-like involucre, or immersed in the internodes of a readily disarticulating rachis, 1-flowered, or if 2-flowered the lower flower staminate; no upper empty scales: rachilla not extending beyond the uppermost scale.

Spikelets terete or somewhat dorsally compressed; empty scales manifest: hilum punctiform.

Flowering scale and palet hyaline, thin, much more delicate in structure than the thick-membranous to coriaceous empty scales.

Spikelets unisexual, the pistillate borne in the lower, the staminate in the upper, part of the same spike. TRIBE I. MAYDEAE.

Spikelets in pairs, one sessile, the other pedicellate, the former perfect, the latter sometimes perfect, more commonly with a staminate flower, often empty or reduced to one or two scales, or occasionally wanting.

TRIBE II. ANDROPOGONEAE.

Flowering scale, at least that of the perfect flower, similar in texture to the empty scales, or frequently thicker and firmer, never hyaline and thin.

Flowering scale and palet membranous.

TRIBE III. ZOYSIEAE.

Flowering scale and palet chartaceous, cartilaginous, or coriaceous, very different in color and appearance from the other scales.

TRIBE IV. PANICEAE.

Spikelets much compressed laterally; empty scales none or rudimentary: hilum linear.

TRIBE V. ORYZEAE.

- II. Spikelets with the empty scales persistent, the rachilla hence articulated above them (below them in nos. 25, 27, 33, and 41 and the spikelet falling entire), 1-many-flowered: frequently the upper scales are empty: rachilla often produced beyond the uppermost scale.

A. Spikelets borne in open or spike-like panicles or racemes, usually upon distinct and often long pedicels.

a. Spikelets 1-flowered.

Empty scales 4: palet 1-nerved.

TRIBE VI. PHALARIDEAE.

Empty scales 2 (rarely 1): palet 2-nerved.

TRIBE VII. AGROSTIDEAE.

b. Spikelets 2-many-flowered.

Flowering scales usually shorter than the empty ones, the awn dorsal and usually bent. TRIBE VIII. AVENEAE.

Flowering scales usually longer than the empty ones, the awn terminal and straight, rarely dorsal, sometimes wanting.

TRIBE X. FESTUCEAE.

B. Spikelets in two rows :

On one side of the continuous axis, forming one-sided spikes or racemes.

TRIBE IX. CHLORIDEAE.

On opposite sides of an axis which is often articulated, forming equilateral spikes.

TRIBE XI. HORDEAE.

TRIBE I. MAYDEAE.

Fertile spikelets imbedded in the internodes of the thick rachis.

1. TRIPSACUM.

TRIBE II. ANDROPOGONEAE.

Spikelets alike, perfect.

2. ERIANTHUS.

Spikelets not alike, the sessile perfect, the pedicellate imperfect or wanting.

Inflorescence of spike-like silky racemes.

3. ANDROPOGON.

Inflorescence paniculate.

Pedicellate spikelets present and usually staminate.

4. SORGHUM.

Pedicellate spikelets wanting.

5. SORGHASTRUM.

[TRIBE III. ZOYSIEAE.

A single genus is our range.

6. NAZIA.

TRIBE IV. PANICEAE.

A. Spikelets naked, not involucrate.

Empty scales 2.

Spikelets ovate to orbicular, usually obtuse, rarely acute.

7. PASPALUM.

Spikelets lanceolate, acute to acuminate.

8. SYNTERISMA.

Empty scales 3.

Empty scales not awned.

Spikelets in very slender one-sided racemes which are usually whorled or approximate.

8. SYNTERISMA.

Spikelets in panicles or panicle racemes, the latter never whorled, commonly distant.

10. PANICUM.

Empty scales awned or awn-pointed.

9. ECHINOCHLOA.

B. Spikelets involucrate.

Involucre of numerous bristles.

11. CHAETOCCHLOA.

Involucre of two spine-bearing valves.

12. CENCHRUS.

TRIBE V. ORYZEAE.

Spikelets monoecious.

13. ZIZANIA.

Spikelets perfect.

14. HOMALOCENCHRUS.

TRIBE VI. PHALARIDEAE.

Third and fourth scales awnless.

15. PHALARIS.

Third and fourth scales awned on the back.

16. ANTHOXANTHUM.

TRIBE VII. AGROSTIDEAE.

A. Flowering scale indurated when mature and very closely embracing the grain, or at least firmer than the empty scales.

Rachilla not extending beyond the palet.

Flowering scale awned.

Flowering scale 3-awned.

Flowering scale 1-awned.

Awn twisted.

Awn not twisted.

Flowering scale narrow : awn persistent.

Flowering scale broad : awn deciduous.

Flowering scale awnless.

Rachilla extending beyond the palet.

B. Flowering scale usually hyaline or membranous at maturity, at least more delicate than the empty ones : grain loosely enclosed.

Inflorescence a spike.

Rachilla of the spikelets articulated below the empty scales, hence deciduous entire.

Rachilla of the spikelets articulated above the empty scales which are therefore persistent.

Flowering scales slightly exceeding the empty ones.

Flowering scales much shorter than the empty ones.

Inflorescence an open or spike-like panicle.

Grain not permanently enclosed in the flowering scale and palet : pericarp opening readily when mature.

Grain permanently enclosed in the flowering scale and palet : pericarp adherent.

Spikelets readily falling off entire when mature.

Spikelets with the empty scales at least persistent.

Palet 1-nerved and 1-keeled : stamen 1.

Palet 2-nerved and 2-keeled : stamens 3.

Flowering scale bifid, delicately awned on the back : rachilla prolonged into a short bristle.

Flowering scale entire : rachilla not prolonged into a bristle.

Flowering scales naked at the base.

Flowering scale with long hairs at the base.

Flowering scale and palet thin-membranous.

Flowering scale and palet chartaceous.

TRIBE VIII. AVENEAE.

Spikelets readily deciduous as a whole.

Spikelets with the empty scales persistent, the flowering scales deciduous.

Spikelets 2-flowered : rachilla not prolonged.

Spikelets 2-many-flowered : rachilla extending beyond the upper flower.

A. Flowering scale awned below the teeth.

a. Flowers all perfect.

Grain free, unfurrowed : spikelets less than 1 cm. long.

Flowering scales erose-toothed or shortly 2-lobed at the apex.

Flowering scales cleft or 2-toothed, the teeth extending into awns.

Grain furrowed, adherent to the scale : spikelets exceeding 1 cm. in length.

17. ARISTIDA.

18. STIPA.

21. MUHLENBERGIA.

19. ORYZOPSIS.

20. MILIUM.

22. BRACHYELYTRUM.

25. ALOPECURUS.

23. HELEOCHLOA.

24. PHLEUM.

26. SPOROBOLUS.

27. POLYPOGON.

28. CINNA.

32. APERA.

29. AGROSTIS.

30. CALAMAGROSTIS.

31. AMMOPHILA.

33. HOLCUS.

34. AIRA.

35. DESCHAMPSIA.

36. TRISETUM.

37. AVENA.

- b. Flowers various, the upper perfect, the lower staminate and with the scale strongly awned. 38. *ARRHENATHERUM*.
 B. Flowering scales awned between their usually awned teeth. 39. *DANTHONIA*.

TRIBE IX. CHLORIDEAE.

- Spikelets deciduous as a whole. 41. *SPARTINA*.
 Spikelets with at least the empty scales persistent.
 Spikelets with one perfect flower.
 Spikes few, long and slender, digitate. 40. *CAPRIOLA*.
 Spikes many, short and stout, racemose. 42. *ATHEROPOGON*.
 Spikelets with 2-3 perfect flowers.
 Spikes with terminal spikelets. 43. *ELEUSINE*.
 Spikes with the rachis extending beyond the spikelets in a manifest tip. 44. *DACTYLOCTENIUM*.

TRIBE X. FESTUCEAE.

- Hairs on the rachilla or flowering scale very long and enclosing the latter : tall reed-like grasses. 45. *PHRAGMITES*.
 Hairs, if any, on the rachilla or flowering scales shorter than the scale : grasses of lower stature.
 Flowering scale 1-3-nerved, or rarely with faint additional intermediate nerves.
 Lateral nerves of the flowering scale pilose.
 Internodes of the rachilla long, the deeply 2-lobed flowering scales attached by a long pointed callus. 47. *TRIPLASIS*.
 Internodes of the rachilla and the blunt callus of the flowering scale short. 46. *TRIDENS*.
 Lateral nerves of the flowering scale glabrous.
 Second empty scale similar to the first.
 Rachilla of the spikelet continuous : palets often persistent. 48. *ERAGROSTIS*.
 Rachilla of the spikelet articulated. 50. *KOELERIA*.
 Second empty scale very dissimilar to the first, broad and rounded at the summit. 49. *EATONIA*.
 Flowering scales 5-many-nerved.
 Spikelets with two or more of the upper scales empty, broad and enfolding each other. 51. *MELICA*.
 Spikelets with the upper scales flower-bearing, or smaller and empty.
 Empty basal scales 3-6. 52. *UNIOLA*.
 Empty basal scales 2.
 Spikelets borne in fascicles which are arranged in a glomerate or interrupted panicle. 54. *DACTYLIS*.
 Spikelets borne in panicles or racemes but not in fascicles.
 Spikelets relatively large, cordate. 53. *BRIZA*.
 Spikelets relatively small, not cordate.
 A. Stigmas inserted at or near the apex of the ovary.
 Flowering scales with the nerves parallel.
 Styles present : flowering scales markedly 5-7-nerved. 56. *PANICULARIA*.
 Styles wanting : flowering scales obscurely 5-nerved. 57. *PUCCINELLIA*.
 Flowering scales with the lateral nerves converging above toward the midnerve.
 a. Flowering scales strongly keeled on the back, pubescent on some or all of the nerves : hilum punctiform. 55. *POA*.

b. Flowering scales rounded on the back, at least below : hilum linear.

58. *FESTUCA*.

B. Stigmas plainly inserted below the apex of the ovary.

59. *BROMUS*.

TRIBE XI. HORDEAE.

Spikelets singly arranged at the rachis-nodes.

Spikelets with the flowering scales with their backs to the rachis : empty scale 1.

60. *LOLIUM*.

Spikelets with the flowering scales with their sides to the rachis : empty scales 2.

Spikelets 1-2-flowered, in slender, jointed spikes.

61. *LEPTURUS*.

Spikelets 2-many-flowered, in stout, jointless spikes.

62. *AGROPYRON*.

Spikelets 2-6 at each rachis-node :

1-flowered.

63. *HORDEUM*.

2-many-flowered.

Empty scales usually as long as the flowering ones.

64. *ELYMUS*.

Empty scales wanting or minute.

65. *HYSTRIX*.

1. *TRIPSACUM* L.

1. *Tripsacum dactyloides* L. GAMA GRASS. (Man. p. 67; I. F. f. 210.) In swamps and on shaded banks, Conn. to Kans., Fla., Tex. and Neb.—*Pennsylvania* : BERKS, near Reading; CHESTER; LANCASTER.

2. *ERIANTHUS* Michx.

1. *Erianthus compactus* Nash. CONTRACTED PLUME-GRASS. (Man. p. 68; I. F. f. 213.) In moist soil, N. J. and Pa. to N. C. and Tenn.—*Pennsylvania* : BUCKS.

3. *ANDROPOGON* L.

Racemes singly disposed : rachis-internodes appendaged at the apex.

1. *A. scoparius*.

Racemes 2 or more together : rachis internodes not appendaged.

Pedicellate spikelet as large as the sessile one or larger, consisting of 4 scales, a staminate flower, or rarely a perfect flower.

2. *A. furcatus*.

Pedicellate spikelet much smaller than the sessile one, sterile, with 1 or 2 scales.

Inflorescence with its branches not much divided nor the lower branches not excessively elongated, hence long and narrow : upper stem-leaves usually shorter than the inflorescence.

3. *A. Virginicus*.

Inflorescence with its branches many times divided, the lower ones elongated, thus forming a corymbiform mass or masses : upper stem-leaves usually exceeding the inflorescence.

4. *A. corymbosus*.

1. *Andropogon scoparius* Michx. BROOM BEARD-GRASS. (Man. p. 69; I. F. f. 216.) In sandy soil, N. B. to Fla., Ala. and Texas.—*Pennsylvania* : DELAWARE; CHESTER; PHILADELPHIA; BUCKS; LANCASTER; NORTHAMPTON; LUZERNE; DAUPHIN; ALLEGHENY.

2. *Andropogon furcatus* Muhl. FORKED BEARD-GRASS. (Man. p. 70; I. F. f. 219.) In dry or moist, often stony soil, Me. and Ont. to Man., Fla. and Tex.—*Pennsylvania* : DELAWARE; CHESTER; PHILA-

DELFIA; BUCKS; LANCASTER; DAUPHIN; LEBANON; CENTRE; BLAIR; ERIE; YORK; ALLEGHENY.

3. *Andropogon Virginicus* L. VIRGINIA BEARD-GRASS. (Man. p. 70; I. F. f. 220.) In fields or thickets, Mass. to Ill., Fla. and Texas.—*Pennsylvania*: DELAWARE; CHESTER; PHILADELPHIA; LANCASTER; LUZERNE.

4. *Andropogon corymbosus* (Chapm.) Nash. BUSHY BEARD-GRASS. (Man. p. 69; I. F. f. 221.) In damp soil or swamps, N. Y. and Pa. to Fla.—*Pennsylvania*: DELAWARE; CHESTER; LANCASTER; BUCKS; MONTGOMERY.

4. SORGHUM Pers.

1. *Sorghum Halepense* (L.) Pers. JOHNSON-GRASS. (Man. p. 71; I. F. f. 225.) In waste places and fields, Pa. to Kans., Fla. to Tex.—*Pennsylvania*: PHILADELPHIA; BUCKS.

5. SORGHASTRUM Nash.

1. *Sorghastrum avenaceum* (Michx.) Nash. INDIAN GRASS. (Man. p. 71; I. F. f. 224.) In dry fields, Ont. to Man., R. I., Fla. and Ariz.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LANCASTER; LUZERNE; HUNTINGDON; PHILADELPHIA; YORK; DAUPHIN; ERIE; ALLEGHENY.

6. NAZIA Adans.

1. *Nazia racemosa* (L.) Kuntze. PRICKLE GRASS. (Man. p. 72; I. F. f. 226.) On or near ballast.—*Pennsylvania*: PHILADELPHIA.

7. PASPALUM L.

Rachis dilated, its broad margins membranous and at maturity inrolled on the spikelets.

1. *P. membranaceum*.

Rachis winged or wingless, its margins neither membranous nor enclosing the spikelets.

Plants with 1-several raceme-bearing peduncles from the uppermost sheath.

Peduncle long-hirsute below the raceme: basal leaf-sheaths glabrous or nearly so.

2. *P. pubescens*.

Peduncles glabrous: basal leaf-sheaths generally hirsute.

3. *P. Muhlenbergii*.

Plants with simple stems, no raceme-bearing peduncles from the upper sheath.

4. *P. laeve*.

1. *Paspalum membranaceum* Walt. WALTER'S PASPALUM. (Man. p. 73; I. F. f. 228.) In wet or moist soil, N. J. to Ohio, Fla. and Tex.—*Pennsylvania*: PHILADELPHIA, on ballast and in waste places.

2. *Paspalum pubescens* Muhl. PUBESCENT PASPALUM. (Man. p. 74.) In fields, N. Y. to D. C. and Tenn. *Pennsylvania*: MONTGOMERY, Willow Grove.

3. *Paspalum Muhlenbergii* Nash. MUHLENBERG'S PASPALUM. (Man. p. 75.) In sandy or stony ground, Mass to Mo., S. C., Miss. and I. Terr.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; LANCASTER; BUCKS; PHILADELPHIA; YORK; CHESTER; DELAWARE, Tinicum.

4. *Paspalum laeve* Michx. FIELD PASPALUM. (Man. p. 73; I. F. f. 234.) In fields, R. I. to Ky. and Mo., south to Fla. and Tex.—*Penn-*

sylvania: DELAWARE; CHESTER; LANCASTER; YORK; LEBANON; FRANKLIN; NORTHAMPTON; PHILADELPHIA; MONTGOMERY.

8. *SYNTHESISMA* Walt.

Rachis of the racemes merely angled: first scale wanting or rarely rudimentary.

Rachis of the racemes with the lateral angles winged.

Foliage glabrous: spikelets usually of 3 scales.

Foliage pubescent: spikelets of 4 scales.

1. *S. filiforme*.

2. *S. humifusum*.

3. *S. sanguinale*.

1. *Syntherisma filiforme* (L.) Nash. SLENDER FINGER-GRASS. (Man. p. 76; I. F. f. 242.) In dry or sandy soil, Mass. to Mich., N. C. and I. Terr.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LANCASTER; PHILADELPHIA; CRAWFORD.

2. *Syntherisma humifusum* (Pers.) Rydb. SPREADING PASPALUM. In fields and waste places, Ont. to Kans., Fla. and La.—*Pennsylvania*: LANCASTER; DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; ERIE; FRANKLIN; PHILADELPHIA; ALLEGHENY.

3. *Syntherisma sanguinale* (L.) Dulac. LARGE CRAB-GRASS. FINGER-GRASS. (Man. p. 77; I. F. f. 240.) In cultivated ground and waste places, nearly throughout N. A. Nat. from Eu.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; LANCASTER; FRANKLIN; PHILADELPHIA; DAUPHIN; HUNTINGDON; ERIE; ALLEGHENY. Common.

9. *ECHINOCLOA*.

Leaf-sheaths glabrous.

Leaf-sheaths, at least the lower ones, papillose-hispid.

1. *E. Crus-galli*.

2. *E. Walteri*.

1. *Echinocloa Crus-galli* (L.) Beauv. BARNYARD GRASS. (Man. p. 78; I. F. f. 243.) In cultivated and waste places, throughout N. A. except the extreme north. Nat. from Eu. *Pennsylvania*: DELAWARE; CHESTER; BUCKS; LANCASTER; FRANKLIN; NORTHAMPTON; JEFFERSON; ALLEGHENY.

2. *Echinocloa Walteri* (Pursh) Nash. SALTMARSH COCKSPUR GRASS. (Man. p. 78; I. F. f. 244.) In marshes, principally near salt water, Ont. to R. I., Fla. and La.—*Pennsylvania*: PHILADELPHIA.

10. *PANICUM* L.

Spikelets tuberculate, the tubercles not hair-bearing. 1. *P. verrucosum*.

Spikelets not tuberculate, or if so the tubercles bearing hairs.

A. Basal and stem leaves similar, elongated: spikelets lanceolate to ovate, commonly the former, acute to acuminate.

a. Lower leaf-sheaths terete or but little flattened, not keeled.

*Stems finally branched, plants without long rootstocks or stolons.

Sheaths very pubescent.

Spikelets lanceolate, 3 mm. long or less.

Stems stout: panicle usually included at the base, its many branches repeatedly divided and bearing numerous spikelets.

2. *P. capillare*.

Stems slender: panicle exserted, its few branches but little divided and bearing comparatively few spikelets.

Spikelets 2 mm. long, acute.

Spikelets lanceolate, about 0.6 mm. wide.

3. *P. Philadelphicum.*

Spikelets elliptic, about 0.8 mm. wide.

4. *P. Galtingeri.*

Spikelets 3 mm. long, acuminate.

5. *P. flexile.*

Spikelets ovate, 5 mm. long or more.

6. *P. miliaceum.*

Sheaths glabrous.

7. *P. proliferum.*

** Stems simple, from long stout rootstocks.

Stems tufted: rootstocks scaly.

8. *P. virgatum.*

Stems not tufted, rootstocks not scaly.

9. *P. amarum.*

b. Lower leaf-sheaths much compressed, broad, keeled, often equitant.

Plants with no long rootstocks.

Fourth scale of the spikelet sessile.

Ligule naked: stems finally much branched.

10. *P. agrostoides.*

Ligule ciliate: stems simple or nearly so.

11. *P. longifolium.*

Fourth scale of the spikelet distinctly stalked.

12. *P. stipitatum.*

Plants with long, scaly rootstocks.

13. *P. anceps.*

B. Basal and stem leaves dissimilar, the former generally much shorter and broader than the latter: rosulate tufts of leaves often present in the fall: spikelets oval to obovate or globose, obtuse, or rarely acutish (acute in no. 15).

a. Middle leaf-blades of the main stem less than 1.5 cm. broad, usually less than 1 cm., the base rounded or truncate, rarely subcordate, sometimes narrowed.

Leaf-blades elongated, erect or nearly so, narrow, distinctly narrowed toward the base, especially the lower ones.

Leaf-blades narrowly linear: secondary branches on short basal branches.

Spikelets less than 3 mm. long, obtuse or acutish, pubescent.

14. *P. linearifolium.*

Spikelets 3-4 mm. long, acute, glabrous.

15. *P. depauperatum.*

Leaf-blades lanceolate: no basal panicles.

16. *P. Bicknellii.*

Leaf-blades not elongated, lanceolate, not manifestly narrowed toward the base.

Stems, leaf-blades and sheaths glabrous, or the latter two parts merely ciliate on the margins.

Spikelets glabrous.

17. *P. dichotomum.*

Nodes of the stem naked.

18. *P. barbulatum.*

Nodes of the stem densely barbed.

Spikelets pubescent.

Leaf-blades smooth above or nearly so, thin, naked at the base.

19. *P. boreale.*

Leaf-blades very rough above, thick, ciliate at the base.

28. *P. sphaerocarpon.*

Stems, leaf-blades or sheaths, or all of them pubescent.

* Spikelets 2.5 mm. long or less.

Leaf-blades glabrous, or sometimes minutely pubescent beneath.

Spikelets about 1.25 mm. long: stems glabrous.

20. *P. nitidum.*

Spikelets about 2.5 mm. long: stems puberulent.

31. *P. Ashei.*

Leaf-blades strongly pubescent beneath, usually also above.

Hairs on the lower surface soft and copious.

Spikelets 1.5 mm. long. 24. *P. Tennesseense*.

Spikelets 2.5 mm. long. 25. *P. scoparium*.

Hairs on the lower surface long and stiff.

Spikelets 1.5 mm. long.

Stems slender: hairs on the upper surface of the leaf-blades extremely long and copious. 21. *P. implicatum*.

Stems rather stout: hairs on the upper surface of the leaf-blades more scattered, sometimes nearly wanting.

22. *P. unciphyllum*.

Spikelets a little more than 2 mm. long.

23. *P. Atlanticum*.

** Spikelets exceeding 3 mm. in length.

Panicle narrow, its branches appressed: spikelets usually few.

27. *P. xanthophysum*.

Panicle open, its branches spreading: spikelets usually numerous.

26. *P. Scribnerianum*.

b. Middle leaf-blades of the main stem 1.5 cm. wide, often 3 cm., the base cordate and clasping.

Spikelets 2.5 mm. long or less.

Leaf-blades glabrous on both surfaces.

Spikelets about 1.5 mm. long: panicle oblong and dense: stems simple. 29. *P. polyanthes*.

Spikelets 2.5 mm. long: panicle ovoid and open: stems branched. Sheaths pubescent.

Leaf-blades ciliate at the base: spikelets 3 mm. long or more.

35. *P. clandestinum*.

Leaf-blades naked at the base: spikelets less than 3 mm. long.

36. *P. decoloratum*.

Sheaths glabrous. 30. *P. commutatum*.

Leaf-blades densely villous. 25. *P. scoparium*.

Spikelets 3 mm. long or more.

Nodes naked.

Sheaths hispid: panicle contracted, its branches appressed.

27. *P. xanthophysum*.

Sheaths glabrous, or somewhat pubescent on the margins: panicle open, its branches spreading. 32. *P. macrocarpon*.

Nodes manifestly and copiously barbed: spikelets 4-5 mm. long.

Lower surface of the leaf-blades paler, glabrous.

33. *P. Porterianum*.

Lower surface of the leaf-blades pubescent, as are also the sheaths and stems. 34. *P. pubifolium*.

1. *Panicum verrucosum* Muhl. WARTY PANICUM. (Man. p. 81; I. F. f. 278.) Moist soil, Mass. to Fla., and La., mostly near the coast.—*Pennsylvania*: DELAWARE, Tinicum; BUCKS, Bristol.

2. *Panicum capillare* L. WITCH GRASS. TUMBLE-WEED. (Man. p. 81; I. F. f. 274.) In dry soil, common as a weed in cultivated fields. N. S. to B.C., Fla., Tex. and Nev.—*Pennsylvania*: DELAWARE; CHESTER; LANCASTER; DAUPHIN; NORTHAMPTON; ERIE; JEFFERSON; PHILADELPHIA: FRANKLIN.

3. *Panicum Philadelphicum* Bernh. WOOD PANICUM. (Man. p. 82; I. F. f. 277.) In dry woods and thickets, N. B. to Ga., west to Mo.—

Pennsylvania: BUCKS, Nockimixon Cliffs; JEFFERSON; LANCASTER; PHILADELPHIA.

4. *Panicum Gattingeri* Nash. GATTINGER'S PANICUM. (Man. p. 82.) Moist places, N. J. to Tenn., Mo. and southward.—*Pennsylvania*: PHILADELPHIA.

5. *Panicum flexile* (Gattinger) Scribn. WIRY PANICUM. (Man. p. 82; I. F. f. 275.) In moist or dry soil. Pa. to Tenn. and Mo.—*Pennsylvania*: LANCASTER, Dillerville Swamp.

6. *Panicum milliaceum* L. MILLET. (Man. p. 82; I. F. f. 272.) In waste places, Me. to Pa. and N. J. Adventive from the Old World. *Pennsylvania*: DAUPHIN; NORTHAMPTON; LANCASTER; LUZERNE; PHILADELPHIA.

7. *Panicum proliferum* Lam. SPREADING PANICUM. (Man. p. 82; I. F. f. 273.) In wet soil, Me. to Neb., south to Fla. and Tex.—*Pennsylvania*: LANCASTER; DELAWARE; CHESTER; NORTHAMPTON; DAUPHIN; FRANKLIN; JEFFERSON; PHILADELPHIA.

8. *Panicum virgatum* L. TALL SMOOTH PANICUM. (Man. p. 82; I. F. f. 270.) In moist or dry soil, Me. to Minn., Fla. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; LANCASTER; BUCKS; NORTHAMPTON; LUZERNE; PHILADELPHIA.

9. *Panicum amarum* Ell. SEA-BEACH PANICUM. (Man. p. 83; I. F. f. 271.) On sea-beaches or brackish shores, Conn. to Fla.—*Pennsylvania*: PHILADELPHIA.

10. *Panicum agrostoides* Spreng. AGROSTIS-LIKE PANICUM. (Man. p. 83; I. F. f. 249.) Wet ground, Me. to Minn., Fla., Kan. and Tex.—*Pennsylvania*: BUCKS; NORTHAMPTON; LANCASTER.

11. *Panicum longifolium* Torr. LONG LEAVED PANICUM. (Man. p. 83; I. F. f. 251.) Moist soil, N. J. and Pa.—*Pennsylvania*: NORTHAMPTON; MONTGOMERY.

12. *Panicum stipitatum* Nash. LONG PANICUM. (Man. p. 83; I. F. f. 250.) Moist soil, N. J. and Pa. to Kans., Tenn. and N. C.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; PHILADELPHIA.

13. *Panicum anceps* Michx. BEAKED PANICUM. (Man. p. 83; I. F. f. 248.) Moist soil, N. J. to Mo., Fla. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; LANCASTER; LEBANON; BUCKS; LEHIGH; NORTHAMPTON; MONTGOMERY; PHILADELPHIA.

14. *Panicum linearifolium* Scribn. LINEAR-LEAVED PANICUM. (Man. p. 83; I. F. f. 268a.) Dry soil, especially hillsides, N. Y. and N. J. to Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; BERKS; LEBANON; DELAWARE; VENANGO.

15. *Panicum depauperatum* Muhl. STARVED PANICUM. (Man. p. 83; I. F. f. 268.) In dry places, N. S. to Man., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; SCHUYLKILL; DELAWARE; LANCASTER; PIKE; CHESTER.

16. *Panicum Bicknellii* Nash. BICKNELL'S PANICUM. (Man. p. 84; I. F. f. 268c.) Dry wooded hills, N. Y. and Pa.—*Pennsylvania*: FRANKLIN, slate hills near Chambersburg.

17. *Panicum dichotomum* L. FORKED PANICUM. (Man. p. 84; I. F. f. 264.) In woodlands and thickets, N. Y. to Ky., Mo., and southward.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; CHESTER; PIKE; LANCASTER; DELAWARE, Tinicum.

18. *Panicum barbulatum* Michx. BARBED PANICUM. (Man. p. 85; I. F. f. 265.) Moist soil, N. Y. to Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; CHESTER; BUCKS; DELAWARE, Tinicum; LANCASTER.

19. *Panicum boreale* Nash. NORTHERN PANICUM. (Man. p. 85; I. F. f. 261.) Moist, often rich soil, Newf. and Ont. to Vt., Pa. and Minn.—*Pennsylvania*: MONROE, Pocono Summit, Tobyhanna; NORTHAMPTON.

20. *Panicum nitidum* Lam. SHINING PANICUM. (Man. p. 85; I. F. f. 263.) Common in dry sandy soil in the Eastern and Middle States.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; LANCASTER; ALLEGHENY.

21. *Panicum implicatum* Scribn. HAIRY-PANICLED PANICUM. (Man. p. 86; I. F. f. 267a.) In dry soil, Me. to Conn., N. Y. and N. J.—*Pennsylvania*: NORTHAMPTON.

22. *Panicum unciphyllum* Trin. HAIRY PANICUM. (Man. p. 86, as *P. pubescens*; I. F. f. 267.) In dry soil, Me. and Quebec to B. C., Ga. and Ariz.—*Pennsylvania*: NORTHAMPTON; PIKE; BUCKS; MONROE; PHILADELPHIA; CHESTER; FRANKLIN; LANCASTER; MONTGOMERY; DELAWARE.

23. *Panicum Atlanticum* Nash. ATLANTIC PANICUM. (Man. p. 86; I. F. f. 267f.) Dry soil, N. Y. to Va.—*Pennsylvania*: NORTHAMPTON.

24. *Panicum Tennesseense* Ashe. TENNESSEE PANICUM. (Man. p. 1040.) In woods, N. Y. to Ill., Tenn. and Fla.—*Pennsylvania*: NORTHAMPTON; LANCASTER.

25. *Panicum scoparium* Lam. VELVETY PANICUM. (Man. p. 87, as *P. viscidum*; I. F. f. 266.) In moist soil, N. J. to Ind., I. Terr., Fla. and Texas.—*Pennsylvania*: DELAWARE, Tinicum.

26. *Panicum Scribnerianum* Nash. SCRIBNER'S PANICUM. (Man. p. 87; I. F. f. 259.) In dry or moist soil, Me. to Minn., south to Va. and Ariz.—*Pennsylvania*: LANCASTER, Safe Harbor; CHESTER, barrens; NORTHAMPTON, Easton; BUCKS; PHILADELPHIA; DELAWARE; ERIE.

27. *Panicum xanthophyllum* A. Gray. SLENDER PANICUM. (Man. p. 87; I. F. f. 258.) Dry soil, Me. to Man., N. J. and Penn.—*Pennsylvania*: BUCKS, Tullytown; LYCOMING; LUZERNE.

28. *Panicum sphaerocarpon* Ell. ROUND-FRUITED PANICUM. (Man. p. 88; I. F. f. 252.) Dry soil, southern Ont., and Mo., to Fla., Tex. and Mex.—*Pennsylvania*: NORTHAMPTON; LUZERNE; CHESTER; BUCKS; PHILADELPHIA; DELAWARE; MONTGOMERY.

29. *Panicum polyanthes* Schult. SMALL-FRUITED PANICUM. (Man. p. 88; I. F. f. 253.) Woods and thickets, southern N. Y. to Pa. and Mich., south to Fla., La., Neb. and Tex.—*Pennsylvania*: PERRY, on Susquehanna; LANCASTER, Tucquan Island; PHILADELPHIA; BUCKS; CHESTER; DELAWARE.

30. *Panicum commutatum* Schultes. VARIABLE PANICUM. (Man. p. 88; I. F. f. 255.) In dry woods and thickets, N. Y. to Ky., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; BUCKS; DELAWARE.

31. *Panicum Ashei* G. Pearson. ASHE'S PANICUM. (Man. p. 88.) In dry woods, N. Y. to Tenn. and Ga.; also in Mo.—*Pennsylvania*: LANCASTER.

32. *Panicum macrocarpon* LeConte. LARGE-FRUITED PANICUM. (Man. p. 88; I. F. f. 256.) Moist places, Vt. to N. Y., N. J. and Pa.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS, Rockhill; PIKE; DELAWARE.

33. *Panicum Porterianum* Nash. PORTER'S PANICUM. (Man. p. 88; I. F. f. 254.) In woods, Me. to Minn., south to Fla. and Tex.—*Pennsylvania*: LANCASTER; BUCKS; BEDFORD; CARBON; HUNTINGDON; DELAWARE; CHESTER; LUZERNE; MONTGOMERY; FULTON; PHILADELPHIA; FRANKLIN; MONROE; LACKAWANNA.

34. *Panicum pubifolium* Nash. HAIRY-LEAVED PANIC-GRASS. (Man. p. 1041.) In rocky woods, N. Y. to Mo., Fla. and Minn.—*Pennsylvania*: NORTHAMPTON; BUCKS; CARBON; LANCASTER; FRANKLIN.

35. *Panicum clandestinum* L. HISPID PANICUM. (Man. p. 88; I. F. f. 257.) In thickets, Quebec to Mich., south to Ga. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; PHILADELPHIA; NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; VENANGO; MONTGOMERY; PIKE.

36. *Panicum decoloratum* Nash. DISCOLORED PANIC-GRASS.—*Pennsylvania*: BUCKS, Tullytown.

11. CHAETOCHLOA.

Inflorescence with the spikelets racemosely arranged: bristles 5-16 at the base of each spikelet, involucrate. 1. *C. glauca*.

Inflorescence with the spikelets in clusters or on branches: bristles 1-3 at the base of each spikelet, not involucrate.

Bristles downwardly barbed.

2. *C. verticillata*.

Bristles upwardly barbed.

Panicle usually 1 cm. thick or less: bristles commonly green: spikelets about 2 mm. long.

3. *C. viridis*.

Panicle usually 2-3 cm. thick: bristles usually purple: spikelets 2.5-3 mm. long.

4. *C. Italica*.

1. *Chaetochloa glauca* (L.) Scribn. YELLOW FOXTAIL. PIGEON-GRASS. (Man. p. 89; I. F. f. 281.) In waste places and cultivated grounds throughout N. Am., except the extreme north. Naturalized from Europe.—*Pennsylvania*: DELAWARE; CHESTER; PHILADELPHIA; BUCKS; NORTHAMPTON; LANCASTER; HUNTINGDON; ERIE; FRANKLIN.

2. *Chaetochloa verticillata* (L.) Scribn. FOXTAIL-GRASS. (Man. p. 89; I. F. f. 280.) In waste places, N. S. and Ont. to N. J. and Ky.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; PHILADELPHIA; CHESTER; ALLEGHENY.

3. *Chaetochloa viridis* (L.) Scribn. GREEN FOXTAIL-GRASS. (Man. p. 90; I. F. f. 282.) In waste places and cultivated grounds, throughout N. A., except the extreme north. Naturalized from Europe.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; FRANKLIN; LANCASTER; ERIE; PHILADELPHIA.

4. *Chaetochloa Italica* (L.) Scribn. ITALIAN MILLET. HUNGARIAN GRASS. (Man. p. 90; I. F. f. 283.) In waste places, Quebec to Minn., Neb., Fla. and Tex. Native of the Old World.—*Pennsylvania*: CHESTER; NORTHAMPTON; LUZERNE; LYCOMING; BUCKS; PHILADELPHIA; ALLEGHENY.

12. *CENCHRUS* L.

1. *Cenchrus tribuloides* L. BUR-GRASS. HEDGEHOG-GRASS. (Man. p. 90; I. F. f. 284.) On sandy shores and in waste or cultivated places, Me. to Minn., Colo., Fla. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; LANCASTER; DAUPHIN; PHILADELPHIA.

13. *ZIZANIA* L.

1. *Zizania aquatica* L. WILD OR INDIAN RICE. WATER OATS. (Man. p. 91; I. F. f. 286.) In swamps, N. B. to Man., south to Fla. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; PHILADELPHIA; BUCKS; LANCASTER, in Susquehanna above Marietta; YORK; ERIE, Presque Isle.

14. *HOMALOCENCHRUS* Mieg.

Stamens 1 or 2: panicle-branches singly disposed, usually less than 8.

1. *H. Virginicus.*

Stamens 3: panicle-branches, at least the lower ones, in whorls or approximately in pairs, usually exceeding 15.

2. *H. oryzoides.*

1. *Homalocenchrus Virginicus* (Willd.) Britton. WHITE GRASS. (Man. p. 91; I. F. f. 287.) In swamps or wet or moist woods, Me. to Minn., Fla., Kans. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; FRANKLIN; LANCASTER; HUNTINGDON; ERIE, Fenno; PHILADELPHIA; MONROE; YORK.

2. *Homalocenchrus oryzoides* (L.) Poll. RICE CUT-GRASS. (Man. p. 91; I. F. f. 288.) In swamps and along streams, N. S. to Ont., Fla., Kans. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; LANCASTER; ERIE; MONTGOMERY; JEFFERSON; PHILADELPHIA; FRANKLIN; PIKE; MONROE.

15. *PHALARIS* L.

Outer scales of the spikelets not winged.

1. *P. arundinacea.*

Outer scales of the spikelets manifestly winged.

2. *P. Canariensis.*

1. *Phalaris arundinacea* L. REED CANARY-GRASS. (Man. p. 92; I. F. f. 290.) In moist or wet soil, N. S. to B. C., south to N. J., Ky., Kans. and Nev. Also in Eu. and Asia. *Pennsylvania*: DELAWARE; PHILADELPHIA; CHESTER; BUCKS; NORTHAMPTON; LUZERNE; HUNTINGDON; ERIE; MONROE; LANCASTER; SUSQUEHANNA; ALLEGHENY.

2. *Phalaris Canariensis* L. CANARY-GRASS. (Man. p. 92; I. F. f. 292.) In waste places, N. S. to Ont., Va. and Neb. Nat. from Eu.—*Pennsylvania*: LANCASTER; PHILADELPHIA; NORTHAMPTON; ALLEGHENY.

16. ANTHOXANTHUM L.

1. *Anthoxanthum odoratum* L. SWEET VERNAL-GRASS. (Man. p. 92; I. F. f. 293.) In fields throughout nearly the whole of N. Am. Nat. from Eu.—*Pennsylvania*: DELAWARE; PHILADELPHIA; CHESTER; BUCKS; BERKS; MONROE; BLAIR; ERIE; LANCASTER; SOMERSET; FRANKLIN. Common.

17. ARISTIDA L.

Central awn coiled at the base.

1. *A. dichotoma*.

Central awn not coiled at the base.

Spikelets over 2 cm. long: first scale 5-7-nerved.

2. *A. oligantha*.

Spikelets less than 1.5 cm. long: first scale 1-3-nerved.

First scale shorter than the second.

3. *A. gracilis*.

First scale longer than the second.

4. *A. purpurascens*.

1. *Aristida dichotoma* Michx. POVERTY GRASS. (Man. p. 94; I. F. f. 297.) In dry, sandy soil, Me. to Mo., Ga. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; LANCASTER; BUCKS; PHILADELPHIA; NORTHAMPTON; FRANKLIN; MONTGOMERY; YORK.

2. *Aristida oligantha* Michx. FEW-FLOWERED ARISTIDA. (Man. p. 95; I. F. f. 303.) In dry soil, N. J. and Md. to Neb., La. and Tex.—*Pennsylvania*: PHILADELPHIA; DELAWARE.

3. *Aristida gracilis* Ell. SLENDER ARISTIDA. (Man. p. 95; I. F. f. 298.) In dry soil, Mass. to Neb., Fla. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; LANCASTER; FRANKLIN; MONTGOMERY; PHILADELPHIA.

4. *Aristida purpurascens* Poir. PURPLISH ARISTIDA. (Man. p. 95; I. F. f. 301.) In dry soil, Mass. to Minn., Fla. and Tex.—*Pennsylvania*: BUCKS; NORTHAMPTON; LANCASTER; YORK; FRANKLIN.

18. STIPA L.

1. *Stipa avenacea* L. BLACK OAT-GRASS. (Man. p. 97; I. F. f. 311.) In dry woods, R. I. to Fla., mostly near the coast. Also in western Ont. and Wis.—*Pennsylvania*: CHESTER; DELAWARE; PHILADELPHIA.

19. ORYZOPSIS Michx.

Spikelets, exclusive of their awns, 3-4 mm. long.

1. *O. juncea*.

Spikelets, exclusive of their awns, 6-8 mm. long.

Stems with the leaves mostly crowded at the base: panicle 5-8 cm. long, the branches 2.5 cm. long or less, erect.

2. *O. asperifolia*.

Stems leafy: panicle 15-30 cm. long, the branches 5-8 cm. long, more or less spreading.

3. *O. melanocarpa*.

1. *Oryzopsis juncea* (Michx.) B.S.P. SLENDER MOUNTAIN RICE. (Man. p. 97; I. F. f. 314.) In dry rocky places, Quebec to B. C., Mass., Pa. and Wis.—*Pennsylvania*: MONROE; LUZERNE.

2. *Oryzopsis asperifolia* Michx. WHITE-GRAINED MOUNTAIN RICE. (Man. p. 98; I. F. f. 316.) In woods, N. S. to B. C., N. J., Minn. and in the Rocky Mountains to N. Mex.—*Pennsylvania*: MONROE; LUZERNE; HUNTINGDON; BLAIR; ÉRIE; SOMERSET.

4. *Oryzopsis melanocarpa* Muhl. BLACK-FRUITED MOUNTAIN RICE. (Man. p. 98; I. F. f. 317.) In rocky woods, Vt. to Minn., N. J., Ky. and Mo.—*Pennsylvania*: BUCKS; PHILADELPHIA; LANCASTER; LUZERNE; HUNTINGDON; SOMERSET; PIKE.

20. MILIUM L.

1. *Milium effusum* L. TALL MILLET-GRASS. (Man. p. 98; I. F. f. 319.) In woods, Quebec to Mich. and Pa.—*Pennsylvania*: WAYNE; SULLIVAN; MERCER; ÉRIE; CHESTER; CLARION.

21. MUHLENBERGIA Schreb.

Panicle contracted, its branches erect or nearly so: spikelets on short pedicels. Empty scales at least $\frac{1}{2}$ as long as the spikelet.

Flowering scale not awned, but sometimes awn-pointed.

Empty scales not awned, about $\frac{1}{2}$ as long as the flowering scale, acute.

1. *M. sobolifera*.

Empty scales long-acuminate, awn-pointed or awned.

Empty scales about as long as the flowering scale, sharp-pointed, about 3 mm. long.

2. *M. Mexicana*.

Empty scales exceeding the flowering scale, usually twice as long, awned, about 5 mm. long.

3. *M. racemosa*.

Flowering scale long-awned, the awn usually twice as long as the scale.

Empty scales about equalling the flowering scale.

4. *M. sylvatica*.

Empty scales $\frac{1}{2}$ – $\frac{2}{3}$ as long as the flowering scale.

5. *M. tenuiflora*.

Empty scales minute, the first one often wanting.

6. *M. diffusa*.

Panicle open, its filiform branches spreading or ascending: spikelets on very long capillary pedicels.

7. *M. capillaris*.

1. *Muhlenbergia sobolifera* (Muhl.) Trin. ROCK MUHLENBERGIA. (Man. p. 99; I. F. f. 320.) Rocky woods, Mass. to Minn., Va., Tenn. and the I. Terr.—*Pennsylvania*: NORTHAMPTON; DELAWARE; CHESTER; BUCKS; LANCASTER; HUNTINGDON; PHILADELPHIA; FRANKLIN.

2. *Muhlenbergia Mexicana* (L.) Trin. MEADOW MUHLENBERGIA. (Man. p. 99; I. F. f. 321.) In swamps and borders of fields, N. B. to western Ont., N. C., Tenn. and the I. Terr.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; CLEARFIELD; PHILADELPHIA; ÉRIE; ALLEGHENY.

3. *Muhlenbergia racemosa* (Michx.) B.S.P. MARSH MUHLENBERGIA. (Man. p. 99; I. F. f. 322.) In wet places or thickets, Newf. to B. C., N. J., Mo. and N. Mex.—*Pennsylvania*: CHESTER; BUCKS; LANCASTER; MONROE; LYCOMING; CRAWFORD; ÉRIE; PIKE.

4. *Muhlenbergia sylvatica* Torr. WOOD MUHLENBERGIA. (Man. p. 100; I. F. f. 323.) In moist woods and along streams, N. B. to Minn., N. C., Tenn. and the I. Terr.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; LEBANON; LANCASTER; CLEARFIELD; PHILADELPHIA; MONROE.

5. *Muhlenbergia tenuiflora* (Willd.) B.S.P. SLENDER MUHLENBERGIA. (Man. p. 100; I. F. f. 326.) In rocky woods, Mass. to southern Ont. and Minn., Ala. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; HUNTINGDON; BLAIR; LANCASTER; FRANKLIN.

6. *Muhlenbergia diffusa* Willd. NIMBLE WILL. DROPSEED GRASS. (Man. p. 100; I. F. f. 327.) On dry hills and in woods, Me. to Minn., Fla. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; BLAIR; ERIE; PHILADELPHIA.

7. *Muhlenbergia capillaris* (Lam.) Trin. LONG AWNED HAIR-GRASS. (Man. p. 101; I. F. f. 329.) In dry sandy or rocky soil, Mass. to Mo., Fla. and Tex.—*Pennsylvania*: LANCASTER, Gap.

22. BRACHYELYTRUM Beauv.

1. *Brachyelytrum erectum* (Schreb.) Beauv. BRACHYELYTRUM. (Man. p. 101; I. F. f. 332.) In moist places or woods, Newf. to Minn., N. C., Tenn. and Mo.—*Pennsylvania*: DELAWARE; CHESTER; NORTHAMPTON; LANCASTER; ERIE; PHILADELPHIA; MONROE; LACKAWANNA; PIKE; FRANKLIN.

23. HELEOCHLOA Host.

1. *Heleocholea schoenoides* (L.) Host. RUSH CAT'S-TAIL GRASS. (Man. p. 102; I. F. f. 333.) In waste places, southern N. Y. to Del. Nat. from Eu.—*Pennsylvania*: PHILADELPHIA; BUCKS; DELAWARE; LANCASTER, Columbia and Lancaster.

24. PHEUM L.

1. *Phleum pratense* L. TIMOTHY. HERD GRASS. (Man. p. 102; I. F. f. 334.) In fields nearly throughout N. Am. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; ERIE; PHILADELPHIA; CHESTER; ALLEGHENY. Common.

25. ALOPECURUS L.

Empty scales of the spikelet united for $\frac{1}{2}$ their length, glabrous to hispid on the keel.

1. *A. agrestis*.

Empty scales of the spikelet united for $\frac{1}{4}$ their length or less, long-ciliate on the keel.

2. *A. geniculatus*.

1. *Alopecurus agrestis* L. SLENDER FOXTAIL. (Man. p. 103; I. F. f. 336.) In waste places, southern N. Y. to N. J. Adv. from Eu. Native also of Asia.—*Pennsylvania*: PHILADELPHIA, on and near ballast.

2. *Alopecurus geniculatus* L. MARSH FOXTAIL. (Man. p. 103; I. F. f. 337.) In wet soil, Newfoundland to B. C., Fla., Ariz. and Cal.—*Pennsylvania*: DELAWARE, Tinicum; HUNTINGDON; LUZERNE.

26. SPOROBOLUS R. Br.

A. Leaf-sheaths glabrous.

a. Upper leaf-sheaths enclosing panicles which are usually concealed, or sometimes partially protruding: terminal panicle contracted, narrow.

Annual plants.

1. *S. vaginaeflorus*.

Perennial plants.

Flowering scale appressed-pubescent below with long hairs.

2. *S. asper*.

Flowering scale glabrous.

3. *S. longifolius*.

b. Upper leaf-sheaths not enclosing panicles.

Panicle usually loose and open, its branches spreading or ascending, or if erect the panicle not elongated.

4. *S. heterolepis*.

Panicle narrow and elongated, spike-like.

5. *S. Indicus*.

B. Leaf-sheaths with a tuft of long spreading hairs on each side of the apex.

6. *S. cryptandrus*.

1. ***Sporobolus vaginaeflorus*** (Torr.) Wood. SHEATHED RUSH-GRASS. (Man. p. 105; I. F. f. 344.) In dry soil, N. Y. to Mo., Ga. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; FRANKLIN; HUNTINGDON; PHILADELPHIA; ALLEGHENY.

2. ***Sporobolus asper*** (Michx.) Kunth. ROUGH RUSH-GRASS. (Man. p. 104; I. F. f. 341.) In dry soil, Del. to Ill., Fla. and Tex.—*Pennsylvania*: LANCASTER.

3. ***Sporobolus longifolius*** (Torr.) Wood. LONG-LEAVED RUSH-GRASS. (Man. p. 105; I. F. f. 342.) In dry soil, Me. to Kans., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; LANCASTER; DAUPHIN.

4. ***Sporobolus heterolepis*** A. Gray. NORTHERN DROPSEED. (Man. p. 106; I. F. f. 354.) In dry soil, Quebec to Assiniboia, Pa., Ill. and Ark.—*Pennsylvania*: LANCASTER, New Texas.

5. ***Sporobolus Indicus*** (L.) R. Br. INDIA RUSH-GRASS. (Man. p. 106; I. F. f. 349.) In meadows and waste places, Va. to Fla., Ark. and Cal. Nat. from tropical regions of Am.—*Pennsylvania*: PHILADELPHIA, on and near ballast.

6. ***Sporobolus cryptandrus*** (Torr.) A. Gray. SAND DROPSEED. (Man. p. 106; I. F. f. 353.) In sandy soil, coast of N. Eng., along all the Great Lakes, west to N. Dak. south to Tex. and Mex.—*Pennsylvania*: ERIE, Presque Isle.

27. POLYPOGON Desf.

1. ***Polypogon Monspeliensis*** (L.) Desf. BEARD-GRASS. (Man. p. 108; I. F. f. 358.) In waste places, N. H. to S. C., mostly near the coast. Very abundant in western N. A., from B. C. to Mex. Nat. from Eu.—*Pennsylvania*: PHILADELPHIA, mainly on ballast; BUCKS.

28. CINNA L.

Panicle contracted at maturity, its filiform branches erect, or drooping: spikelets 4-5 mm. long, the first scale much shorter than the second.

1. *C. arundinacea*.

Panicle open, its capillary branches flexuous and drooping: spikelets 3 mm. long, the first scale about equalling the second.

2. *C. latifolia*.

1. ***Cinna arundinacea*** L. WOOD REED-GRASS. (Man. p. 108; I. F. f. 360.) In moist woods and shaded swamps, Newf. to the N. W.

Terr., N. C. and Tex.—*Pennsylvania*: CHESTER; BUCKS; LUZERNE; NORTHAMPTON; LANCASTER; HUNTINGDON; BLAIR; DELAWARE; FRANKLIN.

2. *Cinna latifolia* (Trev.) Griseb. SLENDER WOOD REED-GRASS. (Man. p. 108; I. F. f. 361.) In damp woods, Newf. to B. C., N. J., in the Alleghenies to N. C., to Wis., and the Rocky Mts. to Colo. and Utah. —*Pennsylvania*: MONROE; LACKAWANNA; HUNTINGDON; BLAIR; ERIE; PIKE.

29. AGROSTIS L.

Palet of the spikelet conspicuous, at least $\frac{1}{3}$ as long as the scale.

1. *A. alba*.

Palet inconspicuous, minute, or wanting.

Flowering scale awnless, or very rarely bearing a short awn.

Stems weak, usually decumbent and often prostrate at the base: leaf-blades lax: panicle oblong, the spikelets about 1.5 mm. long.

2. *A. perennans*.

Stems, and usually also the leaf-blades, erect.

Branches of the panicle capillary, elongated, commonly dividing above the middle.

Spikelets 1.5–2 mm. long: leaf-blades short.

3. *A. hyemalis*.

Spikelets 2.5–3 mm. long: leaf-blades elongated.

4. *A. altissima*.

Branches of the panicle not elongated, dividing at or below the middle.

5. *A. Scribneriana*.

Flowering scale awned.

6. *A. canina*.

1. *Agrostis alba* L. RED-TOP. HERD-GRASS. (Man. p. 109; I. F. f. 362.) In fields nearly throughout N. Am. Nat. from Eu.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; MONROE; LYCOMING; HUNTINGDON; ERIE; ALLEGHENY; MONTGOMERY; LANCASTER; PHILADELPHIA; PIKE; FRANKLIN. Common.

2. *Agrostis perennans* (Walt.) Tuckerm. THIN-GRASS. (Man. p. 110; I. F. f. 367.) In shaded damp places, Quebec to Wis., S. C. and Tenn. — *Pennsylvania*: DELAWARE; PHILADELPHIA; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; LANCASTER; FRANKLIN; DAUPHIN; CENTRE; HUNTINGDON; JEFFERSON; ERIE; SOMERSET.

3. *Agrostis hyemalis* (Walt.) B.S.P. ROUGH HAIR-GRASS. (Man. p. 110; I. F. f. 368.) In dry or moist soil throughout nearly the whole of N. Am. except the extreme north.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; MONROE; LANCASTER; FRANKLIN; ERIE; JEFFERSON; LACKAWANNA; SCHUYLKILL.

4. *Agrostis altissima* (Walt.) Tuckerm. TALL BENT-GRASS. (Man. p. 111; I. F. f. 369.) In sandy swamps, N. J. to Fla. and Ala.—*Pennsylvania*: MONTGOMERY.

5. *Agrostis Scribneriana* Nash. SCRIBNER'S BENT-GRASS. (Man. p. 111; I. F. f. 370, as *A. intermedia*.) In dry soil, Mass. to N. Y., Tenn. and Mo.—*Pennsylvania*: NORTHAMPTON; LANCASTER.

6. *Agrostis canina* L. BROWN BENT-GRASS. (Man. p. 110; I. F. f. 365.) In meadows, Newfoundland to Alaska, Pa. and Tenn.—*Pennsylvania*: NORTHAMPTON; DAUPHIN; BLAIR.

30. CALAMAGROSTIS Adans.

Rachilla with its prolongation hairy its whole length.

Third scale with a much bent and exserted awn, the hairs of the callus much shorter than the scale. 1. *C. Porteri*.

Third scale with a straight or nearly straight and included awn : hairs of the callus equalling the scale or but little shorter than it.

Panicle open, the lower branches widely spreading. 2. *C. Canadensis*.

Panicle more or less contracted. 3. *C. inexpansa*.

Rachilla with its prolongation hairy only at the top. 4. *C. cinnoides*.

1. *Calamagrostis Porteri* A. Gray. PORTER'S REED-GRASS. (Man. p. 112; I. F. f. 375.) In dry woods, Pa. and southern N. Y.—*Pennsylvania* : HUNTINGDON.

2. *Calamagrostis Canadensis* (Michx.) Beauv. BLUE-JOINT GRASS. (Man. p. 112; I. F. f. 373.) In swamps and wet, often sandy, soil. Newf. to Alaska, N. C., N. Mex. and Calif.—*Pennsylvania* : DELAWARE; BUCKS; NORTHAMPTON; LANCASTER; DAUPHIN; CARBON; WAYNE; PIKE; MONROE; ELK; TIOGA; VENANGO; ERIE.

3. *Calamagrostis inexpansa* A. Gray. BOG REED-GRASS. (Man. p. 113.) Bogs and sandy banks, N. J. and western N. Y. to S. Dak. and Colo.—*Pennsylvania* : LYCOMING, in a bog near Muncy.

4. *Calamagrostis cinnoides* (Muhl.) Scribn. NUTTALL'S REED-GRASS. (Man. p. 113; I. F. f. 379.) In moist soil, N. H. and Mass. to Ga.—*Pennsylvania* : DELAWARE; CHESTER; BUCKS; MONROE; LANCASTER; LEBANON; DAUPHIN; HUNTINGDON; MONTGOMERY; SCHUYLKILL.

31. AMMOPHILA Host.

1. *Ammophila arenaria* (L.) Link. SEA SAND-REED. SEA MAT-WEED. (Man. p. 114; I. F. f. 380.) In sands of the sea coast from N. B. to Va., and inland along the shores of the Great Lakes. Also on the coasts of northern Eu.—*Pennsylvania* : ERIE, Presque Isle.

32. APERA Adans.

1. *Apera Spica-venti* (L.) Beauv. SILKY BENT-GRASS. WINDLE-STRAW. (Man. p. 115; I. F. f. 383.) In waste places and on ballast, Me. to Penn. Adv. from Eu.—*Pennsylvania* : PHILADELPHIA, on and about ballast.

33. HOLCUS L.

1. *Holcus lanatus* L. VELVET-GRASS. MEADOW SOFT-GRASS. (Man. p. 115; I. F. f. 384.) In fields and waste places, N. S. to Ill., N. C. and Tenn. Also on the Pacific Coast. Nat. from Eu.—*Pennsylvania* : DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; LANCASTER; ERIE; SOMERSET; JEFFERSON; PHILADELPHIA; FRANKLIN; ALLEGHENY.

34. AIRA L.

Panicle open : flowering scales about 2 mm. long : plants 10-25 cm. tall.

1. *A. caryophyllea*.

Panicle contracted : flowery scales 3 mm. long : plants 5-8 cm. tall.

2. *A. praecox*.

1. *Aira caryophyllea* L. SILVERY HAIR GRASS. (Man. p. 115; I. F. f. 385.) In fields and waste places, Mass. to Va. Also on the Pacific Coast. Nat. from Eu.—*Pennsylvania*: PHILADELPHIA, about ballast.

2. *Aira praecox* L. EARLY HAIR-GRASS. (Man. p. 116; I. F. f. 386.) In dry fields, southern N. J. and Pa. to Va. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON, Bethlehem.

35. DESCHAMPSIA Beauv.

Flowering scales about 2.5 mm. long, erose-truncate; leaf-blades flat.

1. *D. caespitosa*.

Flowering scales about 4 mm. long, acute or obtuse; leaf-blades involute.

2. *D. flexuosa*.

1. *Deschampsia caespitosa* (L.) Beauv. TUFTED HAIR-GRASS. (Man. p. 116; I. F. f. 387.) Newfoundland to Alaska, N. J., Ill., Minn., and in the Rocky Mts. and Sierra Nevada to N. Mex., mostly in wet soil. Also in Eu. and Asia.—*Pennsylvania*: CHESTER; LANCASTER; MONROE; BUCKS.

2. *Deschampsia flexuosa* (L.) Trin. WAVY HAIR-GRASS. (Man. p. 116; I. F. f. 388.) In dry or sandy soil, Greenland and Newf. to Mich., N. C. and Tenn. Also in Eu.—*Pennsylvania*: LACKAWANNA; NORTHAMPTON; LANCASTER; FRANKLIN; MONROE; PIKE.

36. TRISETUM Pers.

1. *Trisetum Pennsylvanicum* (L.) Beauv. MARSH FALSE OAT. (Man. p. 117; I. F. f. 392.) In swamps and wet meadows, N. Y. to Ill., Fla. and La.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; LANCASTER; DAUPHIN; LYCOMING.

37. AVENA L.

1. *Avena striata* Michx. PURPLE OAT. (Man. p. 118; I. F. f. 393.) In woods, N. B. to B. C., Pa., Mich. and Dak.—*Pennsylvania*: SULLIVAN; ELK.

38. ARRHENATHERUM Beauv.

1. *Arrhenatherum elatius* (L.) Beauv. OAT-GRASS. (Man. p. 118; I. F. f. 396.) In fields and waste places, Me. and Ont. to Ga. and Tenn. Also on the Pacific Coast. Nat. from Eu.—*Pennsylvania*: CHESTER; LANCASTER; NORTHAMPTON.

39. DANTHONIA DC.

Empty scales of the spikelet 1.25 cm. long or less; leaf-sheaths glabrous, or sometimes sparingly pubescent at the base.

Teeth of the flowering scale about 1 mm. long, acute; cauline leaf-blades short; panicle contracted.

1. *D. spicata*.

Teeth of the flowering scale 2-3 mm. long, awned; cauline leaf-blades elongated; panicle usually open.

2. *D. compressa*.

Empty scales more than 1.25 cm. long; leaf-sheaths villous.

3. *D. sericea*.

1. *Danthonia spicata* (L.) Beauv. COMMON WILD OAT-GRASS. (Man. p. 119; I. F. f. 397.) In dry soil, Newf. to N. Dak., N. C. and La.—

Pennsylvania: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; MONROE; LYCOMING; ERIE; ALLEGHENY; WAYNE; PHILADELPHIA; LANCASTER; FRANKLIN; MONTGOMERY.

2. *Danthonia compressa* Austin. FLATTENED WILD OAT-GRASS. (Man. p. 119; I. F. f. 398.) In woods, Me. to N. C. and Tenn.—*Pennsylvania*: MONROE; BERKS; LACKAWANNA; LYCOMING; ERIE; SOMERSET; JEFFERSON; PIKE.

3. *Danthonia sericea* Nutt. SILKY WILD OAT-GRASS. (Man. p. 119; I. F. f. 399.) In dry sandy soil, Mass. to Fla.—*Pennsylvania*: LYCOMING.

40. *CAPRIOLA* Adans.

1. *Capriola Dactylon* (L.) Kuntze. BERMUDA-GRASS. SCUTCH-GRASS. (Man. p. 119; I. F. f. 400.) In fields and waste places, southern N. Y. to Pa. and Tenn., Fla. and Tex. Nat. from Eu. *Pennsylvania*: PHILADELPHIA, on ballast; BUCKS, Bristol; NORTHAMPTON, Bethlehem; DELAWARE, Marcus Hook.

41. *SPARTINA* Schreb.

Second scale long-awned.

1. *S. cynosuroides*.

Second scale awnless.

Leaf-blades flat, 1-2.5 cm. wide.

2. *S. polystachya*.

Leaf-blades involute, at least when dry, 6 mm. wide or less.

3. *S. patens*.

1. *Spartina cynosuroides* (L.) Willd. TALL MARSH-GRASS. (Man. p. 120; I. F. f. 401.) In swamps and along streams of fresh or brackish water, N. S. to Assiniboia, N. J. and Tex. *Pennsylvania*: CHESTER; PHILADELPHIA; BUCKS; DAUPHIN; ALLEGHENY; VENANGO; ERIE; LANCASTER; HUNTINGDON.

2. *Spartina polystachya* (Michx.) Ell. SALT REED GRASS. (Man. p. 120; I. F. f. 402.) In salt and brackish marshes, Me. to Fla. *Pennsylvania*: Probably on the lower Delaware.

3. *Spartina patens* (Ait.) Muhl. SALT-MEADOW GRASS. (Man. p. 120; I. F. f. 403.) On salt marshes, Newf. to Fla. and Tex.—*Pennsylvania*: PHILADELPHIA, mainly on or near ballast.

42. *ATHEROPOGON* Muhl.

1. *Atheropogon curtipendula* (Michx.) Fourn. RACEMED BOUTELOUA. (Man. p. 123; I. F. f. 413.) In dry soil, Ont. to Man., N. J., Tex. and Mex. *Pennsylvania*: CHESTER; NORTHAMPTON; LANCASTER; HUNTINGDON.

43. *ELEUSINE* Gaertn.

1. *Eleusine Indica* (L.) Gaertn. WIRE-GRASS. CRAB-GRASS. YARD-GRASS. (Man. p. 124; I. F. f. 415.) In fields and waste places all over N. Am., except the extreme north. Nat. from the warmer regions of the Old World. *Pennsylvania*: DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; HUNTINGDON; PHILADELPHIA; FRANKLIN; LANCASTER; ALLEGHENY.

44. **DACTYLOCTENIUM** Willd.

1. **Dactyloctenium Aegyptium** (L.) Willd. EGYPTIAN GRASS. (Man. p. 124; I. F. f. 416.) In waste places and cult. ground, southern N. Y. and Va. to Ill. and Cal., Fla. and Mex. *Pennsylvania*; DELAWARE; PHILADELPHIA.

45. **PHRAGMITES** Trin.

1. **Phragmites Phragmites** (L.) Karst. REED. (Man. p. 126; I. F. f. 420.) In swamps nearly throughout the U. S., extending north to N. S., Man. and B. C. Also in Europe and Asia.—*Pennsylvania*: DELAWARE; CHESTER; ERIE, Presque Isle; PHILADELPHIA, Point Breeze.

46. **TRIDENS** R. & S.

1. **Tridens seslerioides** (Michx.) Nash. TALL RED-TOP. (Man. p. 126; I. F. f. 421.) In fields, N. Y. to Kans., Fla. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; LANCASTER; HUNTINGDON; PHILADELPHIA; YORK; FRANKLIN.

47. **TRIPLASIS** Beauv.

1. **Triplasis purpurea** (Walt.) Chapm. SAND-GRASS. (Man. p. 127; I. F. f. 424.) In sand, especially on sea beaches, Me. to Tex. and along the Great Lakes. Also from Neb. to N. Mex.—*Pennsylvania*: ERIE, Presque Isle.

48. **ERAGROSTIS** Beauv.

Stems not creeping: flowers perfect.

Annuals.

Spikelets 2-5-flowered.

Pedicels and branches of the panicle short: stems usually branched above. 1. *E. Frankii*.

Pedicels and branches of the diffuse panicle long and capillary: stems branched only at the base. 2. *E. capillaris*.

Spikelets more than 5-flowered.

Spikelets 1.5 mm. wide or less: palea remaining attached to the continuous rachis for some time after the flowering scales have fallen.

Flowering scales thin, usually bright purplish, the lateral nerves faint or wanting: spikelets about 1 mm. wide. 3. *E. pilosa*.

Flowering scales firm, usually dull purple or green, the lateral nerves very prominent: spikelets about 1.5 mm. wide. 4. *E. Purshii*.

Spikelets exceeding 2 mm. wide: palea falling with the flowering scales and the internodes of the rachis.

Spikelets 2 mm. wide: lower flowering scales about 1.5 mm. long.

5. *E. Eragrostis*.

Spikelets 2.5-3 mm. wide: lower flowering scales 2-2.5 mm. long.

6. *E. major*.

Perennials.

7. *E. pectinacea*.

Stems creeping, rooting at the nodes.

8. *E. hypnoides*.

1. **Eragrostis Frankii** Steud. FRANK'S ERAGROSTIS. (Man. p. 130; I. F. f. 429.) In moist places, N. Y. to Minn., Miss. and Kans.—*Pennsylvania*: CHESTER; LANCASTER; MONROE; NORTHAMPTON.

2. *Eragrostis capillaris* (L.) Nees. CAPILLARY ERAGROSTIS. (Man. p. 130; I. F. f. 428.) In dry places, R. I. to Mo., Ga. and Tex.—*Pennsylvania*: CHESTER; DELAWARE; NORTHAMPTON; LANCASTER; HUNTINGDON; LAWRENCE; PHILADELPHIA; FRANKLIN; ALLEGHENY.

3. *Eragrostis pilosa* (L.) Beauv. TUFTED ERAGROSTIS. (Man. p. 130; I. F. f. 430.) Waste places or cultivated grounds, N. Eng. to Kans., Fla. and Tex., Nat. from Eu.—*Pennsylvania*: DELAWARE; CHESTER; MONROE; LANCASTER; FRANKLIN; FAYETTE; PHILADELPHIA.

4. *Eragrostis Purshii* Schrad. PURSH'S ERAGROSTIS. (Man. p. 130; I. F. f. 431.) In dry places apparently throughout the U. S., extending into Ont.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN; BUCKS; PHILADELPHIA; CHESTER.

5. *Eragrostis Eragrostis* (L.) Karst. LOW ERAGROSTIS. (Man. p. 130; I. F. f. 432.) In waste places or cultivated ground, Ont. to N. Eng. and Pa. Nat. from Eu.—*Pennsylvania*: BUCKS; FRANKLIN.

6. *Eragrostis major* Host. STRONG-SCENTED ERAGROSTIS. (Man. p. 130; I. F. f. 433.) In waste or cultivated places, throughout the U. S. and in Ont. Nat. from Eu.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; PHILADELPHIA; NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

7. *Eragrostis pectinacea* (Michx.) Steud. PURPLE ERAGROSTIS. (Man. p. 131; I. F. f. 436.) In dry soil, Mass. to S. Dak., Fla. and Tex.—*Pennsylvania*: BUCKS.

7a. *E. pectinacea spectabilis* A. Gray. DELAWARE; CHESTER; BUCKS; PHILADELPHIA; LANCASTER; NORTHAMPTON.

8. *Eragrostis hypnoides* (Lam.) B.S.P. CREEPING ERAGROSTIS. (Man. p. 131; I. F. f. 440.) On sandy or gravelly banks, Vt. and Ont. to Ore., Fla., Mex. and West Indies.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; FRANKLIN; HUNTINGDON; TIOGA; PHILADELPHIA; DAUPHIN.

49. *EATONIA* Raf.

Empty scales usually unequal, the first commonly shorter and not more than $\frac{1}{2}$ as wide as the second.

Second scale obovate in side view, rounded at the summit.

Leaf-sheaths, blades and stems glabrous.

1. *E. obtusata*.

Leaf-sheaths, blades and stems softly pubescent.

2. *E. pubescens*.

Second scale oblanceolate in side view, acute or acutish at the apex.

3. *E. Pennsylvanica*.

Empty scales usually equal, the first at least $\frac{1}{3}$ as broad as the second.

Leaf-sheaths and blades softly pubescent.

4. *E. nitida*.

Leaf-sheaths and blades glabrous.

5. *E. glabra*.

1. *Eatonia obtusata* (Michx.) A. Gray. BLUNT-SCALED EATONIA. (Man. p. 132; I. F. f. 441.) In dry soil, Mass. and Ont. to Assiniboia, Fla. and Ariz.—*Pennsylvania*: CHESTER; LANCASTER; DELAWARE.

2. *Eatonia pubescens* Scribn. & Mer. HAIRY EATONIA. (Man. p. 1043.) In dry soil, Pa. to Ga. and Tex.—*Pennsylvania*: CHESTER; LANCASTER.

3. *Eatonia Pennsylvanica* (DC.) A. Gray. PENNSYLVANIA EATONIA. (Man. p. 132; I. F. f. 442.) In hilly woods or moist soil, N. B. to B. C., Ga., La. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; LANCASTER; TIOGA; MONTGOMERY; JEFFERSON; PHILADELPHIA; SOMERSET.

4. *Eatonia nitida* (Spreng.) Nash. SLENDER EATONIA. (Man. p. 132; I. F. f. 443.) In dry woods, southern N. Y. to Ga. and Ala.—*Pennsylvania*: NORTHAMPTON; LEHIGH; MONROE; HUNTINGDON; PHILADELPHIA; BUCKS; DELAWARE; LANCASTER.

5. *Eatonia glabra* Nash. SMOOTH EATONIA. (Man. p. 1043.) In woods, N. Y. to Tenn.—*Pennsylvania*: LANCASTER, Tucquan Creek.

50. KOELERIA Pers.

1. *Koeleria cristata* (L.) Pers. KOELERIA. (Man. p. 133; I. F. f. 444.) In dry sandy soil, especially on prairies, Ont. to B. C., Pa., Neb., Tex. and Calif. Also in Eu. and Asia.—*Pennsylvania*: LACKAWANNA.

51. MELICA L.

Second scale much shorter than the 3-5-flowered spikelet.

1. *M. diffusa*.

Second scale nearly equalling the 2-flowered spikelet.

2. *M. mutica*.

1. *Melica diffusa* Pursh. TALL MELIC-GRASS. (Man. p. 133; I. F. f. 446.) In moist soil or thickets, Pa. to Mo., Va., Kans. and Tex.—*Pennsylvania*: SOMERSET.

2. *Melica mutica* Walt. NARROW MELIC-GRASS. (Man. p. 133; I. F. f. 448.) In rich soil, Pa. to Wis., Fla. and Tex.—*Pennsylvania*: BERKS, near Reading; LANCASTER, Safe Harbor.

52. UNIOLA L.

Spikelets about 6 mm. long, 3-6-flowered: flowering scales 4-5 mm. long.

1. *U. laxa*.

Spikelets 25-40 mm. long, many-flowered: flowering scales 9-12 mm. long.

2. *U. latifolia*.

1. *Uniola laxa* (L.) B.S.P. SLENDER SPIKE-GRASS. (Man. p. 135; I. F. f. 451.) In sandy soil, L. I. to Pa. and Kans., Fla. and Tex., mostly near the coast.—*Pennsylvania*: DELAWARE, Tinicum; BEDFORD.

2. *Uniola latifolia* Michx. BROAD-LEAVED SPIKE-GRASS. (Man. p. 135; I. F. f. 452.) In moist places, Pa. to Kans., Fla. and Tex. *Pennsylvania*: LANCASTER, shores of the Susquehanna River; ALLEGHENY.

53. BRIZA L.

1. *Briza minor* L. LESSER QUAKING-GRASS. (Man. p. 136; I. F. f. 456.) In ballast and waste places about Camden, N. J.; common in Cal., and widely distributed in tropical Am. Adv. or nat. from Eu.—*Pennsylvania*: In the State according to Muhlenberg's Catalogue.

54. DACTYLIS L.

1. *Dactylis glomerata* L. ORCHARD GRASS. (Man. p. 136; I. F. f. 457.) In grassy fields and waste places, N. B. to Man., S. C. and Kans.

Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; LANCASTER; FRANKLIN; CHESTER; ALLEGHENY; ERIE.

55. POA L.

Annuals or biennials: stems densely tufted, low, usually less than 3 dm. long.

1. *P. annua*.

Perennials: stems usually exceeding 3 dm. tall.

Plants green with no long rootstocks.

Flowering scales with the nerves glabrous.

2. *P. debilis*.

Flowering scales with one or more of the nerves pubescent.

Flowering scales with long crimped hairs at the base.

Flowering scales with only the midnerve pubescent.

Flowering scales 2.5 mm. long, the midnerve sparsely pubescent:
plant yellowish green.

3. *P. trivialis*.

Flowering scales 3.5 mm. long, the midnerve densely pubescent:
plant green.

4. *P. alsodes*.

Flowering scales with the midnerve and lateral nerves pubescent.

Midnerve of the flowering scale pubescent only below the middle.

Flowering scales 2–3 mm. long: basal leaves usually relatively short.

Intermediate nerves of the flowering scales obscure.

5. *P. serotina*.

Intermediate nerves of the flowering scales prominent.

6. *P. pratensis*.

Flowering scales 4–5 mm. long: basal leaves very long, often equaling the stem or nearly so.

7. *P. brevifolia*.

Midnerve of the flowering scale pubescent the whole length, or nearly so.

8. *P. sylvestris*.

Flowering scales with no crimped hairs at the base.

9. *P. autumnalis*.

Plants dull bluish green, with long stout often branching rootstocks: stems much compressed.

10. *P. compressa*.

1. *Poa annua* L. ANNUAL MEADOW GRASS. LOW SPEAR-GRASS. (Man. p. 138; I. F. f. 459.) In waste and cult. places nearly throughout N. Am. Nat. from Eu.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; LANCASTER; HUNTINGDON; BLAIR; ERIE; ALLEGHENY; PHILADELPHIA; MONROE; SOMERSET. Common.

2. *Poa debilis* Torr. WEAK SPEAR-GRASS. (Man. p. 139; I. F. f. 472.) In woods, N. S. and N. B. to Minn., R. J., Pa. and Wis. *Pennsylvania*: MONROE, Naomi Pines.

3. *Poa trivialis* L. ROUGHISH MEADOW GRASS. (Man. p. 139; I. F. f. 468.) In meadows and waste places, N. B. to Mich. and Va. Nat. from Eu.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; PHILADELPHIA; NORTHAMPTON; LANCASTER; CENTRE; CLINTON; SOMERSET; PIKE; ALLEGHENY.

4. *Poa alsodes* A. Gray. GROVE MEADOW-GRASS. (Man. p. 140; I. F. f. 475.) In woods and thickets, N. S. to Minn., N. C. and Tenn.—*Pennsylvania*: SULLIVAN, on Loyalsock; ERIE; SOMERSET.

5. *Poa serotina* Ehrh. FALSE RED-TOP. FOWL MEADOW-GRASS. (Man. p. 139; I. F. f. 471.) In swampy places, N. S. and N. B., to Van-

couver Island, N. J., Ill. and Neb. Also in Eu. and Asia.—*Pennsylvania*: TIOGA; CRAWFORD; ERIE; PIKE; NORTHAMPTON.

6. *Poa pratensis* L. KENTUCKY BLUE-GRASS. JUNE-GRASS. (Man. p. 139; I. F. f. 466.) In meadows and woods almost throughout N. Am. Also in Eu. and Asia.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; BLAIR; ERIE; SOMERSET; PIKE; ALLEGHENY.

7. *Poa brevifolia* Muhl. SHORT-LEAVED SPEAR-GRASS. (Man. p. 140; I. F. f. 477.) In rocky woods, N. J. and Pa. to Ill., to N. C. and Tenn.—*Pennsylvania*: DELAWARE; CHESTER; PHILADELPHIA; BUCKS; NORTHAMPTON; LANCASTER; HUNTINGDON; FRANKLIN; ALLEGHENY.

8. *Poa sylvestris* A. Gray. SYLVAN SPEAR-GRASS. (Man. p. 139. I. F. f. 474.) In thickets and meadows, N. Y. to Wis., N. C., La. and Kans.—*Pennsylvania*: WAYNE; BUCKS; CHESTER, at Valley Forge, LANCASTER; PHILADELPHIA; ERIE.

9. *Poa autumnalis* Muhl. FLEXUOUS SPEAR-GRASS. (Man. p. 140; I. F. f. 473.) In woods, N. J. to Ky., Fla. and Tex.—*Pennsylvania*: LANCASTER, Bart and Martic Townships; MONROE, Indian Rock; LACKAWANNA; SULLIVAN; BUCKS.

10. *Poa compressa* L. WIRE-GRASS. ENGLISH BLUE-GRASS. (Man. p. 141; I. F. f. 461.) Waste places, cultivated grounds and woods, almost throughout N. Am. Nat. from Eu. Native also of Asia.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; MONROE; LANCASTER; FRANKLIN; ALLEGHENY; ERIE; MONTGOMERY; SOMERSET; PHILADELPHIA; PIKE. Common.

56. PANICULARIA Fabr.

Spikelets ovate or oblong, 8 mm. long or less.

Flowering scales very broad, obscurely or at least not sharply nerved.

Panicle open, the branches spreading or ascending, often drooping.

Spikelets 3-5-flowered: lowest flowering scale about 2 mm. long.

1. *P. laxa*.

Spikelets 5-12-flowered: lowest flowering scale about 3 mm. long.

2. *P. Canadensis*.

Panicle contracted, the branches erect.

3. *P. obtusa*.

Flowering scales narrow, sharply and distinctly 7-nerved.

Panicle elongated, its branches erect or appressed.

4. *P. elongata*.

Panicle not elongated, its branches usually spreading or ascending, sometimes drooping.

Flowering scales about 2 mm. long, obtuse or rounded at the apex.

Spikelets 3 mm. long or less: branches of the panicle often drooping.

5. *P. nervata*.

Spikelets 4-6 mm. long: branches of the panicle ascending or spreading.

6. *P. Americana*.

Flowering scales 2.5-3 mm. long, truncate and denticulate at the apex.

7. *P. pallida*.

Spikelets linear, 12 mm. long or more.

Flowering scales 4-5 mm. long, obtuse, equalling or exceeding the obtuse palet.

8. *P. fluitans*.

Flowering scales 6-8 mm. long, much shorter than the acuminate palet.

9. *P. acutiflora*.

1. *Panicularia laxa* Scribn. NORTHERN MANNA-GRASS. (Man. p. 143; I. F. f. 484.) In water or wet soil, Me. to Pa.—*Pennsylvania*: MONROE, Pocono Plateau; SCHUYLKILL, Broad Mtn.

2. *Panicularia Canadensis* (Michx.) Kuntze. RATTLESNAKE GRASS. (Man. p. 143; I. F. f. 485.) In swamps and streams, Newf. to Minn., N. J. and Kans.—*Pennsylvania*: CHESTER; BUCKS; LANCASTER; MONROE; SCHUYLKILL; CENTRE; ERIE; SOMERSET; JEFFERSON; LACKAWANNA; TIOGA; PIKE.

3. *Panicularia obtusa* (Muhl.) Kuntze. BLUNT MANNA-GRASS. (Man. p. 143; I. F. f. 486.) In swamps, N. B. to Md.—*Pennsylvania*: CLEARFIELD; MONROE, Tobyhanna Mills.

4. *Panicularia elongata* (Torr.) Kuntze. LONG MANNA-GRASS. (Man. p. 143; I. F. f. 487.) In wet woods, streams, Newf. to Minn., N. C. and Ky.—*Pennsylvania*: BUCKS; LANCASTER; MONROE; CARBON; LACKAWANNA; FRANKLIN; TIOGA; CAMERON; JEFFERSON; WAYNE; PIKE; SUSQUEHANNA.

5. *Panicularia nervata* (Willd.) Kuntze. NERVED MANNA-GRASS. (Man. p. 144; I. F. f. 488.) In moist or wet places, Newf. to B. C., Fla. and Mex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; PHILADELPHIA; LUZERNE; MONROE; FRANKLIN; LANCASTER; TIOGA; HUNTINGDON; ALLEGHENY; ERIE; JEFFERSON; SOMERSET; PHILADELPHIA.

6. *Panicularia Americana* (Torr.) MacM. REED MEADOW-GRASS. (Man. p. 144; I. F. f. 489.) In wet soil, N. B. to Alaska, Tenn., Neb., Colo. and Nev.—*Pennsylvania*: LANCASTER; BUCKS; NORTHAMPTON; MONROE; TIOGA; HUNTINGDON; CLARION; ERIE; SCHUYLKILL.

7. *Panicularia pallida* (Torr.) Kuntze. PALE MANNA-GRASS. (Man. p. 144; I. F. f. 490.) In shallow water, N. B. to Ont., Va., Tenn. and Ind.—*Pennsylvania*: PHILADELPHIA; BUCKS; NORTHAMPTON; MONROE, Tobyhanna Mills; WAYNE; SUSQUEHANNA.

8. *Panicularia fluitans* (L.) Kuntze. FLOATING MANNA-GRASS. (Man. p. 144; I. F. f. 491.) In swamps, wet places or in water, Newf. to B. C., N. J., Ky., Iowa and Cal. Also in Eu.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; PHILADELPHIA; MONROE.

9. *Panicularia acutiflora* (Torr.) Kuntze. SHARP-SCALED MANNA-GRASS. (Man. p. 144; I. F. f. 492.) In wet places, Me. to Ohio and Tenn.—*Pennsylvania*: HUNTINGDON; BUCKS, Tullytown.

57. PUCCINELLIA Parl.

1. *Puccinellia distans* (L.) Parl. SPREADING MEADOW-GRASS. (Man. p. 145; I. F. f. 494.) On salt marshes, sea beaches and in waste places, N. S. to N. J. Probably nat. from Eu.—*Pennsylvania*: PHILADELPHIA, on and around ballast heaps.

58. FESTUCA L.

A. Annuals: stamens 1 or 2.

a. First empty scale less than $\frac{1}{2}$ as long as the second, usually very small.

1. *F. Myuros*.

- b. First empty scale more than $\frac{1}{2}$ as long as the second.

Spikelets 3-4-flowered; flowering scales glabrous or nearly so, appressed to the rachilla.

Spikelets 6-13-flowered; flowering scales usually strongly hispidulous, decidedly diverging from the rachilla. 2. *F. octoflora*.

B. Perennials: stamens 3.

Leaf-blades very narrow, 2 mm. wide or less, involute or folded.

Leaf-blades setaceous: flowering scales short-awned. 3. *F. ovina*.

Leaf-blades filiform: flowering scales awnless. 4. *F. capillata*.

Leaf-blades 3 mm. wide or more, flat.

Panicle open, its branches at maturity ascending or spreading: spikelets usually less than 6-flowered.

Panicle branches elongated, spikelet-bearing toward the end.

5. *F. nutans*.

Panicle branches not elongated, spikelet-bearing from at or below the middle.

Flowering scales obtuse, 4-5 mm. long.

6. *F. obtusa*.

Flowering scales acute, 6-7 mm. long.

Panicle contracted, its branches erect or appressed: spikelets often 10-flowered.

7. *F. elatior*.

1. *Festuca Myuros* L. RAT'S-TAIL FESCUE-GRASS. (Man. p. 146; I. F. f. 498.) In waste places and fields, eastern Mass. to N. J. and Fla. Also on the Pacific Coast.—*Pennsylvania*: BUCKS.

2. *Festuca octoflora* Walt. SLENDER FESCUE GRASS. (Man. p. 146; I. F. f. 497.) In fields and waste places, Labrador to B. C., N. J., Colo. and Calif. Mostly nat. from Eu., but probably indigenous northward.—*Pennsylvania*: CHESTER; DELAWARE; BUCKS; NORTHAMPTON; LANCASTER; HUNTINGDON; ERIE; FRANKLIN.

3. *Festuca ovina* L. SHEEP'S FESCUE-GRASS. (Man. p. 146; I. F. f. 500.) Dry sandy soil, Quebec to B. C., Fla., Tex. and Calif.—*Pennsylvania*: PIKE.

3a. *F. ovina duriuscula* (L.) Hack. (Man. p. 147.) BUCKS; NORTHAMPTON, CHESTER, ERIE.

4. *Festuca capillata* Lam. FILIFORM FESCUE-GRASS. (Man. p. 147; I. F. f. 500b.) Fields and roadsides, Me. and N. Y. and southward. Introd. from Eu.—*Pennsylvania*: Adventive about the large cities.

5. *Festuca nutans* Willd. NODDING FESCUE-GRASS. (Man. p. 147; I. F. f. 504.) In rocky woods, N. S. to Neb. Fla. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; LANCASTER; HUNTINGDON; ALLEGHENY; VENANGO; ERIE; SOMERSET; PHILADELPHIA; FRANKLIN; WAYNE.

6. *Festuca obtusa* Spreng. SHORT'S FESCUE-GRASS. (Man. p. 147; I. F. f. 503.) In swamps and thickets, Pa. to Kans., Miss. and Tex.—*Pennsylvania*: LANCASTER, Dillerville Swamp.

7. *Festuca elatior* L. TALL OR MEADOW FESCUE-GRASS. (Man. p. 147; I. F. f. 502.) In fields and waste places, N. S. to Ont., N. C., Tenn. and Kans. Nat. from Eu.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; BLAIR; ERIE; JEFFERSON; PHILADELPHIA.

59. *BROMUS* L.

Lower empty scale 1-nerved, the upper 3-nerved.

Annuals : stems usually less than 6 dm. tall : awn longer than the flowering scale.

Spikelets numerous, several on each panicle-branch : flowering scales 8-12 mm. long, appressed, hirsute. 1. *B. tectorum*.

Spikelets few, 1 or sometimes 2 on each panicle-branch : flowering scales 12-16 mm. long, sparingly hispidulous. 2. *B. sterilis*.

Perennials : stems usually exceeding 6 dm. tall : awn shorter than the flowering scale or wanting.

Flowering scales glabrous, or pubescent on the margins. 3. *B. ciliatus*.

Flowering scales densely pubescent all over the back. 4. *B. purgans*.

Lower empty scale 3-nerved, the upper 5-9-nerved.

Flowering scales awned.

Flowering scales pubescent.

Pubescence dense, of long silky hairs. 5. *B. Kalmii*.

Pubescence of soft, short appressed hairs, not dense. 6. *B. hordeaceus*.

Flowering scales glabrous, sometimes slightly roughened.

Leaf-sheaths glabrous : nerves of the turgid fruiting scales obscure. 7. *B. secalinus*.

Leaf-sheaths softly and densely pubescent with reflexed hairs : nerves of the flowering scales prominent. 8. *B. racemosus*.

Flowering scales not awned, nearly as broad as long. 9. *B. brizaeformis*.

1. *Bromus tectorum* L. DOWNY BROME-GRASS. (Man. p. 149 ; I. F. f. 509.) In fields and waste places, R. I. to Ont., Md. and Ohio. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON, streets of Easton ; BUCKS, Bristol.

2. *Bromus sterilis* L. BARREN BROME-GRASS. (Man. p. 150 ; I. F. f. 510.) In waste places and ballast, eastern Mass. to Pa. and Ohio. Locally nat. or adv. from Eu.—*Pennsylvania* : PHILADELPHIA ; MONTGOMERY ; NORTHAMPTON, Easton.

3. *Bromus ciliatus* L. FRINGED BROME-GRASS. WOOD CHESS. (Man. p. 149 ; I. F. f. 506.) In woods and moist thickets, Newf. to B. C., Fla. and Tex.—*Pennsylvania* : DELAWARE ; CHESTER ; PHILADELPHIA ; NORTHAMPTON ; LANCASTER ; ERIE ; FULTON ; FRANKLIN ; PIKE ; WAYNE.

4. *Bromus purgans* L. (Man. p. 149, as a subspecies.) In woods and thickets, Can. and N. Eng. to Wyo., Fla. and Tex. — *Pennsylvania* : NORTHAMPTON ; HUNTINGDON ; ERIE.

5. *Bromus Kalmii* A. Gray. KALM'S CHES. (Man. p. 150 ; I. F. f. 512.) In moist woods and thickets, Quebec to Man., south to Mass. Pa., Ill. and Iowa.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; LANCASTER ; HUNTINGDON ; VENANGO.

6. *Bromus hordeaceus* L. SOFT CHES. (Man. p. 150 ; I. F. f. 513.) In fields and waste places, N. Y. to Va. Locally adv. from Eu.—*Pennsylvania* : CHESTER ; PHILADELPHIA, ballast.

7. *Bromus secalinus* L. CHEAT CHES. (Man. p. 150 ; I. F. f. 514.) In fields and waste places almost throughout temperate N. Am. Nat.

from Eu. Native also of Asia.—*Pennsylvania*: DELAWARE; CHESTER; BUCKS; LUZERNE; NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

8. *Bromus racemosus* L. UPRIGHT CHESS. SMOOTH BROME-GRASS. (Man. p. 150; I. F. f. 515.) In fields and waste places all over the eastern U. S. and British Am.; also on the Pacific Coast. Nat. from Eu. Native also of Asia.—*Pennsylvania*: BUCKS; PHILADELPHIA; LANCASTER; NORTHAMPTON; MONTGOMERY; ERIE; FRANKLIN.

9. *Bromus brizaeformis* Fisch. & Mey. QUAKE-GRASS BROME. (Man. p. 151; I. F. f. 517.) Sparingly introd. into Pa.; also from Mont. to Calif. Native of northern Eu. and Asia.—*Pennsylvania*: LANCASTER.

60. *LOLIUM* L.

Empty scale shorter than the spikelet.

1. *L. perenne*.

Empty scale equalling or extending beyond the flowering scales.

2. *L. temulentum*.

1. *Lolium perenne* L. RAY-GRASS. RYE-GRASS. (Man. p. 152; I. F. f. 521.) In waste and cult. grounds almost throughout the northern U. S. and southern British Am. Nat. from Eu. Native also of Asia.—*Pennsylvania*: DELAWARE; CHESTER; PHILADELPHIA; BUCKS; NORTHAMPTON; LANCASTER; FRANKLIN; ERIE; BERKS.

2. *Lolium temulentum* L. DARNEL. IVRAY. (Man. p. 152; I. F. f. 522.) In waste and cult. grounds, locally, N. B. to Mich. and Ga. Nat. or adv. from Eu. Abundant on the Pacific coast.—*Pennsylvania*: PHILADELPHIA, on ballast; NORTHAMPTON; DELAWARE.

61. *LEPTURUS* R. Br.

1. *Lepturus filiformis* (Roth.) Trin. SLENDER HARDGRASS. (Man. p. 152; I. F. f. 523.) In waste places, Pa. to N. C., near or along the coast. Adv. from Eu.—*Pennsylvania*: southern part of the state, according to Britton, Man. p. 152.

62. *AGROPYRON* J. Gaertn.

Plants with horizontal rootstocks.

1. *A. repens*.

Plants without rootstocks.

Flowering scale terminated with an awn shorter than the scale body.

2. *A. Novae-Angliae*.

Flowering scale terminated with an awn longer than its body.

3. *A. caninum*.

1. *Agropyron repens* (L.) Beauv. COUCH-GRASS. QUITCH-GRASS. (Man. p. 154; I. F. f. 524.) In fields and waste places almost throughout N. Am., except the extreme north. Nat. from Eu. Native also of Asia.—*Pennsylvania*: DELAWARE; BUCKS; PHILADELPHIA; NORTHAMPTON; LANCASTER; ERIE; ALLEGHENY; JEFFERSON.

1a. *A. repens glaucum* (Desf.) Scribn. PHILADELPHIA.

2. *Agropyron Novae-Angliae* Scribn. NEW ENGLAND WHEAT-GRASS. Mountains of northeastern North America.—*Pennsylvania*: HUNTINGDON; VENANGO.

3. Agropyron caninum (L.) R. & S. AWNEED WHEAT-GRASS. FIBROUS-ROOTED WHEAT-GRASS. (Man. p. 153; I. F. f. 528.) N. B. to B. C., N. C., Tenn. and Colo. Also in Eu. and Asia.—*Pennsylvania*: MONROE, Pocono Summit; PIKE.

63. HORDEUM L.

Flowering scales, exclusive of the awns, 6-8 mm. long.

Awn of the flowering scale 13 mm. long or less.

1. *H. nodosum*.

Awn of the flowering scale 25 mm. long or more.

2. *H. jubatum*.

Flowering scales, exclusive of the awns, 12 mm. long.

3. *H. murinum*.

1. Hordeum nodosum L. MEADOW BARLEY. (Man. p. 155; I. F. f. 529.) In meadows and waste places, Ind. to B. C. and Alaska, Tex. and Calif. Also in Eu. and Asia.—*Pennsylvania*: BUCKS.

2. Hordeum jubatum L. SQUIRREL-TAIL GRASS. (Man. p. 155; I. F. f. 531.) In dry soil, Ont. to Alaska, Kans. and Calif., and naturalized in the east from Colorado and Quebec to Pa.—*Pennsylvania*: PHILADELPHIA; BERKS; BUCKS.

3. Hordeum murinum L. WALL BARLEY. (Man. p. 155; I. F. f. 532.) On ballast and sparingly in waste places, southern N. Y., N. J. and Pa. Also from Ariz. to Cal. Adv. or nat. from Eu.—*Pennsylvania*: PHILADELPHIA.

64. ELYMUS L.

Empty scales narrowly subulate: spike relatively slender. 1. *E. striatus*.

Empty scales linear or linear-lanceolate: spike relatively stout.

Flowering scales glabrous.

2. *E. Virginicus*.

Flowering scales more or less pubescent.

Flowering scales hirsute.

3. *E. Canadensis*.

Flowering scales minutely hispidulous.

4. *E. glabrifolius*.

1. Elymus striatus Willd. SLENDER WILD RYE. (Man. p. 156; I. F. f. 533.) In woods and on banks, Me. and Ont. to Tenn. and Kans.—*Pennsylvania*: DELAWARE; CHESTER; NORTHAMPTON; FRANKLIN; HUNTINGDON; PHILADELPHIA; LANCASTER.

2. Elymus Virginicus L. VIRGINIA WILD RYE. (Man. p. 156; I. F. f. 534.) In moist soil, especially along streams, N. S. and N. B. to Man., Fla. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; PHILADELPHIA; BUCKS; NORTHAMPTON; LANCASTER; FRANKLIN; BLAIR; ERIE; SOMERSET; ALLEGHENY.

3. Elymus Canadensis L. NODDING WILD RYE. (Man. p. 157; I. F. f. 535.) On river banks, N. S. and N. B. to Alberta, Ga., Tex. and N. Mex.—*Pennsylvania*: DELAWARE; CHESTER; PHILADELPHIA; BUCKS; NORTHAMPTON; LANCASTER; BEDFORD; ERIE; ALLEGHENY.

4. Elymus glabrifolius (Vasey) Scribn. & Ball. SMOOTH-FLOWERED WILD RYE. (Man. p. 1043.) In rich woods or thickets, Pa. to Ga. and N. Mex. *Pennsylvania*: NORTHAMPTON, Easton.

65. HYSTRIX Moench.

1. Hystrix Hystrix (L.) Millsp. BOTTLE-BRUSH GRASS. (Man. p. 158; I. F. f. 541.) In rocky woods, N. B. to Ont., Ga., Ill. and Minn.—

Pennsylvania: DELAWARE; PHILADELPHIA; CHESTER; BUCKS; NORTH-AMPTON; LANCASTER; FRANKLIN; LUZERNE; HUNTINGDON; ERIE; ALLEGHENY.

FAMILY 2. **CYPERACEAE** J. St. Hil. SEDGE FAMILY.

Flowers of the spikelets, or at least one of them, perfect.

Scales of the spikelets enclosing a bractlet or a pair of bractlets.

1. **HEMICARPHA.**

Scales of the spikelets not enclosing bractlets.

Spikelets perfect or mainly so, rarely of 2 scales and 1 flower.

Scales of the spikelets 2-ranked.

Perianth present, the members bristle-like.

2. **DULICHIMUM.**

Perianth wanting.

3. **CYPERUS.**

Scales of the spikelets spirally imbricated all around.

Base of the style not at all or only slightly thickened, deciduous.

Perianth-parts conspicuously elongated.

4. **ERIOPHORUM.**

Perianth-parts not conspicuously elongated.

5. **SCIRPUS.**

Base of the style manifestly swollen, persistent as a tubercle on the achene or deciduous.

Perianth present.

6. **ELEOCHARIS.**

Perianth wanting.

Achene not surmounted by a tubercle.

7. **FIMBRISTYLIS.**

Achene surmounted by a tubercle.

8. **STENOPHYLLUS.**

Spikelets polygamous, or rarely of 4 scales and only 1 flower.

Stigmas 3: style deciduous.

9. **CLADIUM.**

Stigmas 2: style persistent.

10. **RYNCHOSPORA.**

Flowers monoecious or dioecious.

Achene not enclosed in a utricle (perigynium).

11. **SCLERIA.**

Achene enclosed in a utricle (perigynium).

12. **CAREX.**

1. **HEMICARPHA** Nees & Arn.

1. **Hemicarpha micrantha** (Vahl.) Britton. **HEMICARPHA.** (Man. p. 183; I. F. f. 646.) In moist sandy soil, R. I. to Pa., Fla., Tex. and Mex. —*Pennsylvania*: LYCOMING, on the Susquehanna; ERIE, Presque Isle.

2. **DULICHIMUM** L. C. Rich.

1. **Dulichium arundinaceum** (L.) Britton. **DULICHIMUM.** (Man. p. 167; I. F. f. 576.) In wet places, N. S. to Ont., Minn., Fla. and Tex. —*Pennsylvania*: PIKE; MONROE; LACKAWANNA; NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; LUZERNE; HUNTINGDON; ERIE.

3. **CYPERUS** L.

A. Style-branches or stigmas 2: achene lenticular.

Superficial cells of the achene oblong.

1. **C. flavescent.**

Superficial cells of the achene quadrate.

Scales of the spikelets blunt.

Scales membranous, dull: style-branches or stigmas much exserted.

2. **C. diandrus.**

Scales subcoriaceous, shining: style-branches or stigmas included or scarcely exserted.

3. **C. rivularis.**

Scales of the spikelets acute or mucronate.

4. **C. Nuttallii.**

B. Style-branches or stigmas 3 : achene trigonous.

Scales falling away from the persistent rachis of the flattened spikelets.

Wings of the rachis, if any, permanently attached to it.

Scales tipped with recurved awns : low annual. 5. *C. inflexus*.

Scales obtuse, acute or acuminate, not awn-tipped.

Wings of the rachis none, or very narrow.

Scapes smooth : plants annual.

6. *C. compressus*.

Scapes rough : plants perennial.

7. *C. Schweinitzii*.

Wings of the rachis distinct.

Scales mucronate.

8. *C. dentatus*.

Scales not mucronate.

Scales wholly or partially purple-brown : achene linear-oblong.

9. *C. rotundus*.

Scales straw-colored : achene obovoid.

10. *C. esculentus*.

Wings of the rachis separating from it as interior scales : annual.

11. *C. erythrorhizos*.

Scales and rachis of the spikelets deciduous.

Achene narrowly linear-oblong, $2\frac{1}{2}$ –4 times as long as thick.

Spikelets distinctly flattened, several-many-flowered.

12. *C. strigosus*.

Spikelets nearly terete to a little flattened, 1-few-flowered.

Spikelets loosely spicate.

13. *C. refractus*.

Spikelets capitate or capitate-spicate.

Spikelets all reflexed : scapes almost always rough.

14. *C. retrofractus*.

Spikelets spreading or only the lower ones reflexed : scapes smooth.

Spikes globose.

15. *C. ovularis*.

Spikes cylindric to oval or obovoid.

16. *C. Lancastriensis*.

Achene oblong to obovoid, not more than twice as long as thick.

Rachis wingless or narrowly winged.

17. *C. filiculmis*.

Rachis-wings broad, membranous.

18. *C. echinatus*.

1. *Cyperus flavescens* L. YELLOW CYPERUS. (Man. p. 161 ; I. F. f. 543.) In marshy grounds, Me. to Mich., Fla. and Mex.—*Pennsylvania* : NORTHAMPTON, Easton ; DELAWARE, Wawa ; PHILADELPHIA, on the Delaware River ; FRANKLIN ; HUNTINGDON ; LANCASTER.

2. *Cyperus diandrus* Torr. LOW CYPERUS. (Man. p. 161 ; I. F. f. 544.) In marshy places, N. B. to Minn, S. C. and Kans.—*Pennsylvania* : MONTGOMERY ; CHESTER ; HUNTINGDON ; LANCASTER ; YORK ; ERIE.

3. *Cyperus rivularis* Kunth. SHINING CYPERUS. (Man. p. 161 ; I. F. f. 545.) In wet soil, Me. to Mich., N. C. and Mo. — *Pennsylvania* : NORTHAMPTON, Island Park ; DELAWARE.

4. *Cyperus Nuttallii* Eddy. NUTTALL'S CYPERUS. (Man. p. 161 ; I. F. f. 546.) In salt or brackish marshes, Me. to Fla. and Miss.—*Pennsylvania* : PHILADELPHIA, on and about ballast.

5. *Cyperus inflexus* Muhl. AWNED CYPERUS. (Man. p. 162 ; I. F. f. 549.) In wet sandy soil, Vt. to N. W. Terr., Fla. and Mex.—*Pennsylvania* : NORTHAMPTON ; CHESTER ; LANCASTER ; DAUPHIN.

6. *Cyperus compressus* L. FLAT CYPERUS. (Man. p. 162 ; I. F. f. 550.) In fields, Md. to Fla. Also in trop. Am. and the Old World,

and adventive northward.—*Pennsylvania*: PHILADELPHIA, on and about ballast.

7. *Cyperus Schweinitzii* Torr. SCHWEINITZ'S CYPERUS. (Man. p. 162; I. F. f. 551.) In moist sandy soil, Ont. to Pa., the N. W. Terr., Minn., and Kans.—*Pennsylvania*: ERIE, Presque Isle.

8. *Cyperus dentatus* Torr. TOOTHED CYPERUS. (Man. p. 163; I. F. f. 556.) In sandy swamps and on river shores, Me. to W. Va. and S. C.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; DAUPHIN; YORK.

9. *Cyperus rotundus* L. NUT-GRASS. (Man. p. 163; I. F. f. 557.) In fields, Pa. to Fla., Kans. and Tex. Nat. Also in tropical Am. and the Old World.—*Pennsylvania*: NORTHAMPTON, Bethlehem; DELAWARE.

10. *Cyperus esculentus* L. YELLOW NUT-GRASS. (Man. p. 163; I. F. f. 559.) In moist fields, N. B. to Minn., Fla. and Tex. Also on the Pacific Coast from Calif. to Alaska, in tropical Am. and the Old World.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; DELAWARE; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; CHESTER.

11. *Cyperus erythrorhizos* Muhl. RED-ROOTED CYPERUS. (Man. p. 163; I. F. f. 560.) In wet soil, Ont. to Calif., Mass., Fla. and Tex.—*Pennsylvania*: DAUPHIN, Forster's Island; PHILADELPHIA, on the Schuylkill; DELAWARE.

12. *Cyperus strigosus* L. STRAW-COLORED CYPERUS. (Man. p. 164; I. F. f. 565.) In moist meadows and swamps, Me. to Minn., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; CHESTER; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; ERIE.

12a. *C. strigosus robustior* Kunth. (Man. p. 165.) BUCKS.

12b. *C. strigosus capitatus* Boeckl. (Man. p. 164.) LANCASTER.

12c. *C. strigosus compositus* Britton. LANCASTER; PHILADELPHIA.

13. *Cyperus refractus* Engelm. REFLEXED CYPERUS. (Man. p. 165; I. F. f. 566.) In dry fields, N. J. to Mo. and N. C.—*Pennsylvania*: DELAWARE.

14. *Cyperus retrofractus* (L.) Torr. ROUGH CYPERUS. (Man. p. 165; I. F. f. 567.) In dry, sandy soil, N. J. to Ark., Fla. and Tex.—*Pennsylvania*: PHILADELPHIA; CHESTER.

15. *Cyperus ovularis* (Michx.) Torr. GLOBOSE CYPERUS. (Man. p. 165; I. F. f. 570.) In dry fields and on hills, N. Y. to Kans., Fla. and Tex. *Pennsylvania*: LANCASTER, mouth of the Tucquan Creek, Safe Harbor; BUCKS.

16. *Cyperus Lancastriensis* Porter. LANCASTER CYPERUS. (Man. p. 165; I. F. f. 568.) In dry fields, N. J. and Pa. to Va. and Ala.—*Pennsylvania*: LANCASTER, Safe Harbor, McCall's Ferry; PHILADELPHIA, on the Schuylkill; BUCKS.

17. *Cyperus filiculmis* Vahl. SLENDER CYPERUS. (Man. p. 165; I. F. f. 571.) In dry fields and on hills, R. I. to Ont., Minn., Fla., Kans., Tex. and northern Mex. *Pennsylvania*: NORTHAMPTON; LANCASTER; HUNTINGDON; ERIE; FRANKLIN; DELAWARE.

18. *Cyperus echinatus* (Ell.) Wood. BALDWIN'S CYPERUS. (Man. p. 166; I. F. f. 574.) In dry soil, N. C. to Mo., Fla. and Tex., and adventive northward.—*Pennsylvania*: Bartram's Garden.

4. **ERIPHORUM** L.

Spikelet solitary: involucre of a short bract or wanting. 1. *E. vaginatum*.
Spikelets several, umbellate or capitate: involucre of 1-4 bracts.

Achenes obovoid, obtuse: spikelets umbellate. 2. *E. polystachyon*.

Achenes linear-oblong, acute: spikelets capitate or some of them peduncled.

Leaf-blades channeled: perianth-bristles 4-6 times as long as the scales, bright white.

Perianth-bristles 1-1.5 cm. long: peduncles and upper part of scape smooth. 3. *E. gracile*.

Perianth-bristles 2-2.5 cm. long: peduncles and upper part of scape rough. 4. *E. paucinervium*.

Leaf-blades flat: perianth-bristles 3 times as long as the scale, brown.

5. *E. Virginicum*.

1. *Eriophorum vaginatum* L. SHEATHED COTTON-GRASS. (Man. p. 181; I. F. f. 638.) In bogs or meadows, Newf. to Alaska, Mass., Pa. and Minn. Also in Eu. and Asia.—*Pennsylvania*: MONROE, Tobyhanna Mills, Tannersville, Lehigh Pond; WAYNE.

2. *Eriophorum polystachyon* L. TALL COTTON-GRASS. (Man. p. 182; I. F. f. 641.) In bogs or meadows, Newf. to Alaska, N. J., Ga. and Neb. Also in Eu. and Asia.—*Pennsylvania*: MONROE, Pocono; ERIE.

3. *Eriophorum gracile* Koch. SLENDER COTTON-GRASS. (Man. p. 182.) In bogs and ponds, Newf. to Alaska, N. J., Pa. and Mo. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONROE; PIKE; CHESTER.

4. *Eriophorum paucinervium* (Engelm.) A. A. Eaton. FEW-NERVED COTTON-GRASS. (Man. p. 182; I. F. f. 642, as *E. gracile*.) In bogs, N. B. to N. J. and Ill.—*Pennsylvania*: MONROE, Tobyhanna Mills; SUSQUEHANNA.

5. *Eriophorum Virginicum* L. VIRGINIA COTTON-GRASS. (Man. p. 182; I. F. f. 643.) In bogs or wet sand, Newf. to Man., Fla. and Neb.—*Pennsylvania*: WAYNE; MONROE; LANCASTER; CENTRE; CRAWFORD; ERIE; MONTGOMERY; BUCKS; SCHUYLKILL; MONTOUR; CHESTER; DELAWARE.

5. **SCIRPUS** L.

A. Involucre of a single bract, or wanting.

Spikelets solitary, or rarely 2 in No. 3, terminal.

Involucre wanting.

1. *S. pauciflorus*.

Involucre present, of a single bract.

Bract mostly shorter than the spikelet: scales acuminate: plants not aquatic. 2. *S. planifolius*.

Bract mostly longer than the spikelet: scales acute: plants aquatic.

3. *S. subterminalis*.

Spikelets normally more than 1, usually several or numerous, often apparently lateral.

Spikelets few, 1-12, appearing lateral.

Annual plants, with bluntly 3-angled scapes: achenes plano-convex.

Perianth-bristles about as long as the achene, downwardly barbed.

4. *S. debilis*.

Perianth-bristles minute or obsolete.

5. *S. Smithii*.

Perennial plants, with sharply 3-angled scapes.

Perianth-bristles mostly shorter than the achene: achene plano-convex.

6. *S. Americanus*.

Perianth-bristles mostly longer than the achene: achene 3-angled.

Involucral bract erect.

7. *S. Torreyi*.

Involucral bract abruptly bent.

8. *S. mucronatus*.

Spikelets several or numerous, in umbels or umbel-like clusters.

9. *S. lacustris*.

B. Involucre of 2 or more bracts with flat blades.

Spikelets few to several, capitate to umbellate, relatively large.

10. *S. fluviatilis*.

Spikelets very numerous, in compound umbels or umbelled heads, relatively small.

Perianth-bristles downwardly barbed or wanting: spikelets in umbelled heads.

Perianth-bristles equalling or slightly exceeding the achenes: leaf-blades 6-16 mm. wide.

Stigmas 3: achene 3-angled: perianth-bristles 6.

Spikelets 3-8 in each head: scales obtuse: perianth-bristles barbed throughout.

11. *S. sylvaticus*.

Spikelets 8-20 in each head: scales acute: perianth-bristles not barbed below.

12. *S. atrovirens*.

Stigmas 2: achene lenticular: perianth-bristles 4.

13. *S. rubrotinctus*.

Perianth-bristles twice as long as the achene: leaf-blades 4-6 mm. wide.

14. *S. polyphyllus*.

Perianth-bristles smooth or slightly pubescent: umbel mostly decomposed.

Perianth-bristles shorter than the scales or scarcely exceeding them.

15. *S. lineatus*.

Perianth-bristles much exerted beyond the scales at maturity.

Bracts of the involucre reddish at the base: scales and bristles reddish.

Spikelets sessile, in small heads.

16. *S. cyperinus*.

Spikelets or some of them distinctly peduncled.

17. *S. Eriophorum*.

Bracts of the involucre blackish at the base: scales greenish black: bristles brown or olive-brown.

18. *S. atrocinctus*.

1. ***Scirpus pauciflorus*** Lightf. FEW-FLOWERED CLUB-RUSH. (Man. p. 176; I. F. f. 610.) In wet soil, Anticosti and Ont. to B. C., Pa. and in the Rocky Mountains to Col., and in the Sierra Nevada. Also in Eu.—*Pennsylvania*: ERIE, Presque Isle.

2. ***Scirpus planifolius*** Muhl. WOOD CLUB-RUSH. (Man. p. 176; I. F. f. 613.) In woods and thickets, R. I. to Mo. and Del.—*Pennsylvania*: NORTHAMPTON; CHESTER; MONROE; LANCASTER; HUNTINGDON; ALLEGHENY; LYCOMING; BERKS; SOMERSET.

3. ***Scirpus subterminalis*** Torr. WATER CLUB-RUSH. (Man. p. 176; I. F. f. 614.) In ponds or streams or sometimes on their borders, N. B. to the N. W. Terr., Wash., N. J., Pa. and Mich.—*Pennsylvania*: MONROE; CARBON; ERIE, Presque Isle; LACKAWANNA.

4. *Scirpus debilis* Pursh. WEAK STALKED CLUB-RUSH. (Man. p. 177; I. F. f. 616.) In wet soil, Me. to Minn., Ga., Ala. and Neb.—*Pennsylvania*: NORTHAMPTON; LANCASTER; LEHIGH; CAMERON; ERIE; MONTGOMERY; CHESTER.

5. *Scirpus Smithii* A. Gray. SMITH'S CLUB-RUSH. (Man. p. 177; I. F. f. 617.) In wet muddy places, Vt. to Minn., Del., Pa. and Mich.—*Pennsylvania*: PHILADELPHIA.

6. *Scirpus Americanus* Pers. CHAIR-MAKER'S RUSH. (Man. p. 177; I. F. f. 618.) In fresh water and brackish swamps, throughout N. Am.—*Pennsylvania*: NORTHAMPTON; CHESTER; LANCASTER; DAUPHIN; YORK; CAMBRIA; LEHIGH; LACKAWANNA; BUCKS; FRANKLIN; DELAWARE; ERIE.

7. *Scirpus Torreyi* Olney. TORREY'S BULRUSH. (Man. p. 178; I. F. f. 620.) In swamps, Vt. to Man., R. I. and Pa. — *Pennsylvania*: HUNTINGDON, barrens; CARBON; PIKE, Twelve Mile Pond; ERIE.

8. *Scirpus mucronatus* L. BOG BULRUSH. (Man. p. 178; I. F. f. 621.) In swamps, Pa. Probably adv. or fugitive from Eu.—*Pennsylvania*: DELAWARE; CHESTER.

9. *Scirpus lacustris* L. GREAT BULRUSH. MAT-RUSH. (Man. p. 178; I. F. f. 623.) In ponds and swamps, throughout N. Am. Also in the Old World.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; ARMSTRONG; ERIE; JEFFERSON; DAUPHIN; ALLEGHENY.

10. *Scirpus fluviatilis* (Torr.) A. Gray. RIVER BULRUSH. (Man. p. 179; I. F. f. 628.) In shallow water, Quebec to Minn., N. J. and Kans.—*Pennsylvania*: DELAWARE, Tinicum; LANCASTER, Peach Bottom; ERIE, Presque Isle.

11. *Scirpus sylvaticus* L. WOOD BULRUSH. (Man. p. 179; I. F. f. 629.) In swamps, Mass. to Ga. Also in Eu.—*Pennsylvania*: MONROE; BUCKS; LANCASTER, Smithville, Gap, Little Octorara; JEFFERSON.

12. *Scirpus atrovirens* Muhl. DARK-GREEN BULRUSH. (Man. p. 179; I. F. f. 630.) In swamps, N. S. to Man., Ga. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; SOMERSET; LACKAWANNA; ALLEGHENY.

13. *Scirpus rubrotinctus* Fernald. SMALL-FRUITED BULRUSH. (Man. p. 179; I. F. f. 631, under *S. microcarpus*.) In swamps and wet woods, northeastern North America. *Pennsylvania*: BUCKS.

14. *Scirpus polyphyllus* Vahl. LEAFY BULRUSH. (Man. p. 180; I. F. f. 632.) In swamps, wet woods and meadows, Mass. to Minn., Ala. and Ark.—*Pennsylvania*: MONROE; CHESTER; DAUPHIN; FRANKLIN; HUNTINGDON; BLAIR; JEFFERSON; LANCASTER; ALLEGHENY.

15. *Scirpus lineatus* Michx. REDDISH BULRUSH. (Man. p. 180; I. F. f. 635.) In swamps and wet meadows, Ont. to Ore., Ga. and Tex.—*Pennsylvania*: CHESTER; BRADFORD; ALLEGHENY.

16. *Scirpus cyperinus* (L.) Kunth. WOOL-GRASS. (Man. p. 180; I. F. f. 636.) In swamps or meadows, Newf. to Ont., N. C. and Ky.—*Penn-*

sylvania : CHESTER ; ERIE ; JEFFERSON ; NORTHAMPTON ; FRANKLIN ; LANCASTER ; LACKAWANNA ; YORK ; LEHIGH.

17. *Scirpus Eriophorum* Michx. (Man. p. 180.) In swamps, Newf. to Ont., Fla. and La.—*Pennsylvania* : LANCASTER ; CUMBERLAND.

18. *Scirpus atrocinctus* Fernald. BLACKISH WOOL-GRASS. (Man. p. 1045.) Newf. to Saskatchewan, Pa. and Iowa.—*Pennsylvania* : MONROE.

6. ELEOCHARIS R. Br.

Spikelet scarcely or not at all thicker than the scape : scales mostly leathery.

1. *E. mutata*.

Spikelet usually manifestly thicker than the scape : scales mostly membranous.

Style-branches or stigmas 2 : achene lenticular or biconvex.

Upper sheath scarious, hyaline : plants perennial by slender rootstocks.

2. *E. olivacea*.

Upper sheath truncate, oblique or toothed, not scarious.

Annuals with fibrous roots.

Perianth-bristles longer than the achene : spikelet ovoid.

3. *E. obtusa*.

Perianth-bristles not longer than the achene, often short or wanting : spikelet cylindric.

4. *E. Engelmannii*.

Perennials with horizontal rootstocks.

Tubercle flat-conic.

Scape and spike stout.

5. *E. palustris*.

Scape and spike slender.

6. *E. glaucescens*.

Tubercle swollen, bulb-like : spikelet not thicker than the scape.

7. *E. Smallii*.

Style-branches or stigmas 3 : achene 3-angled or turgid.

Achene cancellate.

Achene longitudinally ribbed.

8. *E. acicularis*.

Achene not longitudinally ribbed.

9. *E. tuberculosa*.

Achene smooth, papillose, or irregularly ridged-reticulated.

Tubercle plainly distinguishable from the achene.

Achenes with the 3 angles ribbed.

10. *E. tricostrata*.

Achenes obtusely 3-angled.

Scapes slender to nearly filiform : scales obtuse.

11. *E. tenuis*.

Scapes flattened : scales acute.

12. *E. acuminata*.

Tubercle long-conic, scarcely distinguishable from the achene.

Scapes filiform, 1-2.5 dm. long : spikelet 4-6 mm. long.

13. *E. intermedia*.

Scapes flattened, 3-6 dm. long : spikelet 7-13 mm. long.

14. *E. rostellata*.

1. *Eleocharis mutata* (L.) R. & S. QUADRANGULAR SPIKE-RUSH. (Man. p. 168 ; I. F. f. 578.) In wet places, N. J. to Mich., Ala., Mo., Tex. and Guatemala. Also in the W. I. and S. Am.—*Pennsylvania* : PHILADELPHIA ; ERIE.

2. *Eleocharis olivacea* Torr. BRIGHT-GREEN SPIKE-RUSH. (Man. p. 168 ; I. F. f. 581.) In wet soil, Me. to Ont. and S. C., mostly near the coast.—*Pennsylvania* : LUZERNE, Lily Lake.

3. *Eleocharis obtusa* Schult. BLUNT SPIKE-RUSH. (Man. p. 1044.) In wet soil, N. B. to B. C., Fla., Tex. and Ore. Also in Eu.—*Pennsylvania*: NORTHUMBERLAND; PHILADELPHIA; DELAWARE; CHESTER; MONROE; HUNTINGDON; FRANKLIN; LANCASTER; LEBANON; MONTOUR; COLUMBIA; ERIE; LACKAWANNA; SCHUYLKILL.

3a. *E. obtusa jejuna* Fernald. HUNTINGDON.

4. *Eleocharis Engelmannii* Steud. ENGELMANN'S SPIKE-RUSH. (Man. p. 169; I. F. f. 585.) In wet soil, Mass. to N. J., Ark., Tex. and Calif.—*Pennsylvania*: DELAWARE, Tinicum; BUCKS; LANCASTER; LEBANON; HUNTINGDON.

5. *Eleocharis palustris* (L.) R. & S. CREEPING SPIKE-RUSH. (Man. p. 169; I. F. f. 586.) In wet places, Labrador to B. C., Fla., Tex. and Calif. Also in Eu. and Asia.—*Pennsylvania*: MONROE; NORTHUMBERLAND; LANCASTER; LUZERNE; HUNTINGDON; DELAWARE; BUCKS; TIOGA; SUSQUEHANNA; PIKE; FRANKLIN; CHESTER; ERIE.

6. *Eleocharis glaucescens* (Willd.) Schult. PALE SPIKE-RUSH. (Man. p. 169.) In wet places, Ont. to Minn., Neb., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER; FRANKLIN; ERIE.

7. *Eleocharis Smallii* Britton. SMALL'S SPIKE-RUSH. Sandy shores of islands, lower Susquehanna River, Pa.—*Pennsylvania*: DAUPHIN, Harrisburg; LANCASTER and YORK, McCall's Ferry.

8. *Eleocharis acicularis* (L.) R. & S. NEEDLE SPIKE-RUSH. (Man. p. 170; I. F. f. 587.) In wet soil, throughout N. A., except the extreme north. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; MONROE; BERKS; LUZERNE; HUNTINGDON; LANCASTER; CHESTER; DELAWARE; ERIE.

9. *Eleocharis tuberculosa* (Michx.) R. & S. LARGE-TUBERCLED SPIKE-RUSH. (Man. p. 170; I. F. f. 590.) In wet soil, Mass. to Fla. and Tex., near the coast.—*Pennsylvania*: MONTGOMERY, bog near Willow Grove.

10. *Eleocharis tricostata* Torr. THREE-RIBBED SPIKE-RUSH. (Man. p. 171; I. F. f. 594.) In wet soil, N. Y. to Fla.—*Pennsylvania*: DELAWARE, Tinicum.

11. *Eleocharis tenuis* (Willd.) Schult. SLENDER SPIKE-RUSH. (Man. p. 171; I. F. f. 595.) In wet soil, Cape Breton Island to Man., Fla. and Tex.—*Pennsylvania*: BUCKS; LANCASTER; SCHUYLKILL; FRANKLIN; CHESTER; DELAWARE.

12. *Eleocharis acuminata* (Muhl.) Nees. FLAT-STEMMED SPIKE-RUSH. (Man. p. 171; I. F. f. 596.) In wet soil, Anticosti to Man., Ga., La. and Mo.—*Pennsylvania*: ERIE, Presque Isle; BUCKS.

13. *Eleocharis intermedia* (Muhl.) Schult. MATTED SPIKE-RUSH. (Man. p. 171; I. F. f. 597.) In marshes, Ont. to Minn., N. J., Ill. and Iowa.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; LANCASTER; FRANKLIN.

14. Eleocharis rostellata Torr. BEAKED SPIKE-RUSH. (Man. p. 171; I. F. f. 598.) In wet places, Vt. to B. C., Fla., Mex. and Cal.—*Pennsylvania*: CRAWFORD.

7. FIMBRISTYLIS Vahl.

Style-branches or stigmas 2: achenes lenticular.

Spikelets peduncled and forming umbels, or solitary and sessile.

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|--|---------------------------|
| Spikelets several, sessile, forming a terminal head. | 1. <i>F. laxa</i> . |
| Style-branches or stigmas 3: achenes 3-angled. | 2. <i>F. VahlII</i> . |
| | 3. <i>F. autumnalis</i> . |

1. Fimbristylis laxa Vahl. WEAK FIMBRISTYLIS. (Man. p. 174; I. F. f. 606.) In moist soil, Pa. to Fla., west to Ill., Mo. and Tex. Also in tropical Am.—*Pennsylvania*: CHESTER; PHILADELPHIA; LANCASTER.

2. Fimbristylis VahlII (Lam.) Link. VAHL'S FIMBRISTYLIS. (Man. p. 174; I. F. f. 607.) In moist soil, Mo. to Tex., east to N. C. and Fla. Also about the eastern cities.—*Pennsylvania*: CHESTER; PHILADELPHIA; LANCASTER.

3. Fimbristylis autumnalis (L.) R. & S. SLENDER FIMBRISTYLIS. (Man. p. 174; I. F. f. 608.) In moist soil, Me. to Mich., Fla. and La. Also in tropical Am.—*Pennsylvania*: CHESTER; NORTHAMPTON; LANCASTER; YORK; DAUPHIN; ERIE; MONTGOMERY; HUNTINGDON; ERIE.

8. STENOPHYLLUS Raf.

1. Stenophyllus capillaris (L.) Britton. HAIR-LIKE STENOPHYLLUS. (Man. p. 173; I. F. f. 603.) In dry or moist soil, throughout N. A., except the extreme north. Also in tropical Am.—*Pennsylvania*: NORTHAMPTON; DELAWARE; LANCASTER; HUNTINGDON; ERIE; MONTGOMERY; PHILADELPHIA; YORK; CHESTER.

9. CLADIUM P. Br.

1. Cladium mariscoides (Muhl.) Torr. TWIG-RUSH. (Man. p. 186; I. F. f. 661.) In marshes, N. S. to Minn., Fla. and Iowa.—*Pennsylvania*: CARBON; LANCASTER; ERIE; CLINTON.

10. RYNCHOSPORA Vahl.

Perianth-bristles downwardly barbed.

Scales white or whitish: perianth-bristles 9-15.

1. *R. alba*.

Scales brown: perianth-bristles 6.

Leaves with filiform blades: achenes oblong.

2. *R. capillacea*.

Leaves with narrowly linear flat blades: achenes obovate.

3. *R. glomerata*.

Perianth-bristles upwardly barbed.

4. *R. cymosa*.

1. Rynchospora alba (L.) Vahl. WHITE BEAKED-RUSH. (Man. p. 185; I. F. f. 651.) In bogs, Newf. to Alaska, Fla., Ky., Minn. and Ore. Also in Eu. and Asia.—*Pennsylvania*: MONROE; LANCASTER; CRAWFORD; ERIE; MONTGOMERY; PHILADELPHIA; LACKAWANNA; PIKE; DELAWARE.

2. Rynchospora capillacea Torr. CAPILLARY BEAKED-RUSH. (Man. p. 185; I. F. f. 652.) In bogs, Va. to Minn., N. J. and Pa.—*Pennsylvania*: LANCASTER; ERIE.

3. *Rynchospora glomerata* (L.) Vahl. CLUSTERED BEAKED-RUSH. (Man. p. 185; I. F. f. 654.) In moist soil, Me. to Mich., Fla. and Tex.—*Pennsylvania*: LACKAWANNA; MONROE; NORTHUMBERLAND; DELAWARE; CHESTER; HUNTINGDON; MONTGOMERY; BUCKS, Bristol; PHILADELPHIA; FRANKLIN; LANCASTER; PERRY.

4. *Rynchospora cymosa* Ell. GRASS-LIKE BEAKED-RUSH. (Man. p. 186; I. F. f. 658.) In moist soil, N. J. to Mo., Fla. and Tex. Also in Cuba.—*Pennsylvania*: BUCKS, Bristol; DELAWARE; LANCASTER.

11. *SCLERIA* Berg.

Inflorescence of 1 or several terminal or lateral clusters.

Achene smooth.

1. *S. triglomerata*.

Achene reticulated, ridged or papillose.

Achene reticulated or irregularly ridged.

Clusters of spikelets sessile or nearly so: achene not hairy.

2. *S. reticularis*.

Lower clusters of spikelets filiform-peduncled: achene hairy.

3. *S. Torreyana*.

Achene papillose.

4. *S. pauciflora*.

Inflorescence interruptedly glomerate-spicate.

5. *S. verticillata*.

1. *Scleria triglomerata* Michx. TALL NUT-RUSH. (Man. p. 187; I. F. f. 663.) In meadows and thickets, Vt. to Wis., Fla. and Tex.—*Pennsylvania*: LANCASTER; HUNTINGDON; VENANGO; CHESTER.

2. *Scleria reticularis* Michx. RETICULATED NUT-RUSH. (Man. p. 187; I. F. f. 664.) In moist meadows, eastern Mass. to Mo. and Fla. Also in Cuba.—*Pennsylvania*: LANCASTER, Pleasant Grove.

3. *Scleria Torreyana* Walp. TORREY'S NUT-RUSH. (Man. p. 188; I. F. f. 665.) In moist soil, N. J. to Fla., Tex. and Mex. Also in Cuba.—*Pennsylvania*: BUCKS; MONROE, Tobyhanna; DELAWARE; LANCASTER.

4. *Scleria pauciflora* Muhl. PAPILLOSE NUT-RUSH. (Man. p. 188; I. F. f. 666.) In dry soil, N. H. to Mo., Fla. and Tex. Also in Cuba.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; MONTGOMERY; CHESTER.

5. *Scleria verticillata* Muhl. LOW NUT-RUSH. (Man. p. 188; I. F. f. 667.) In moist meadows, Mass. to Mich., W. I., Tex. and Mex.—*Pennsylvania*: LANCASTER; ERIE, Presque Isle.

12. *CAREX* L.

A. Staminate flowers numerous, in one or more terminal spikes, which are sometimes pistillate at the base or summit; or the spike solitary and the staminate flowers uppermost or basal, rarely dioecious: stigmas mostly 3 and the achene 3-angled or swollen (stigmas 2 and the achene lenticular or compressed in no. 38). **EUCAREX.**

*Perigynia mostly long-beaked, 3-20 mm. long, often inflated, the beak usually as long as the body or longer (short-beaked in no. 27): pistillate spikes mostly large, globose, ovoid, oblong or cylindric.

Perigynia membranous or papery.

Spike solitary, few-flowered, staminate above: perigynia subulate strongly reflexed. I. PAUCIFLORAE.

Spikes normally several, the staminate uppermost, if solitary staminate at the base.

Perigynia ovoid, conic, each with a narrowed base, or subulate, tapering into the beak.

Teeth of the perigynium-beak slender, short or none, neither stiff nor awned.

Teeth of the perigynium-beak lanceolate or subulate.

II. LUPULINAE.

Teeth of the perigynium-beak short or almost wanting.

III. VESICARIAE.

Teeth of the perigynium-beak stiff, setaceous or awned.

IV. PSEUDOCYPERINAE.

Perigynia obovoid, very abruptly contracted into the beak: spikes exceedingly dense.

V. SQUARROSAE.

Perigynia firm, hard or leathery.

VI. PALUDOSAE.

** Perigynia short-beaked or beakless, little or not at all inflated, 1-5 mm. long, the beak commonly not more than $\frac{1}{2}$ as long as the body (long-beaked in no. 32); spikes small and oblong or globose; or elongated linear or narrowly cylindric.

† Spikes 2 or more, the staminate one always uppermost, sometimes partly pistillate.

‡ Pistillate spike or spikes many-flowered, mostly 2.5 cm. long or more (or shorter in nos. 33, 45, 47, 48, 51, 56-58), linear, narrowly cylindric or oblong.

‡ Perigynia with a straight short beak (long-beaked in no. 32; nearly beakless in no. 28), firm or leathery in texture; pistillate spikes erect; stigmas 3.

Uppermost spike staminate from the base to about the middle.

VII. SHORTIANAE.

Uppermost spike entirely staminate, or occasionally pistillate at the base.

Perigynia papillose; beak very short, nearly or quite entire.

VIII. ANOMALAE.

Perigynia pubescent; beak sharply 2-toothed.

IX. HIRTAE.

‡‡ Perigynia beakless or very short-beaked (see no. 28), and with orifices nearly or quite entire, thin in texture, not inflated, closely investing the achene: pistillate spikes erect or drooping, often brown or purple; stigmas often 2.

Pistillate spikes erect or somewhat spreading.

Terminal spike staminate below: stigmas 3.

X. ATRATAE.

Terminal spike staminate throughout: stigmas 2.

XI. RIGIDAE.

Pistillate spikes drooping, mostly on slender peduncles.

Pistillate spikes 0.6-7.5 cm. long: stigmas 3 (2 in no. 38).

Pistillate spikes linear: scales shorter than the perigynia.

XII. PRASINAE.

Pistillate spikes globose, oblong or cylindric: scales as long as the perigynia, or longer. XIII. PENDULINAE.

Pistillate spikes 2.5-10 cm. long: scales 1-8 times as long as the perigynia.

XIV. CRYPTOCARPAE.

+++ Perigynia tapering to a distinct beak (nearly or quite beakless in nos. 45-49), membranous in texture (firm in no. 55), inflated or loosely investing the achene: pistillate spikes mostly drooping, often narrowly linear.

Terminal spike staminate below, pistillate above: perigynia short-beaked or beakless.

Spikes all erect or nearly so.

XV. VIRESCENTES.

Pistillate spikes drooping or spreading (erect or little spreading in no. 50).

XVI. GRACILLIMAE.

Terminal spike wholly staminate, or sometimes pistillate at the base.

Perigynia manifestly beaked, nerved or nerveless: pistillate spikes drooping

Beak of the perigynium cylindric or subulate, once or twice as long as the body.

XVII. SYLVATICAE.

Beak of the perigynium not more than $\frac{1}{2}$ as long as the body.

XVIII. DEBILES.

Perigynia beakless or minutely beaked, finely many-striate: spikes erect or nearly so.

XIX. GRISEAE.

%% Pistillate spikes small, few-many-flowered, mostly 6-25 mm. long (sometimes longer in no. 67). (See also nos. 33, 45, 47, 48, 51, 56-58.)

Perigynia glabrous.

Pistillate spikes many-flowered, 6-25 mm. long, usually dense.

Pistillate spikes scattered, distant, long-stalked or the 2 upper ones approximate and nearly sessile.

XX. GRANULARES.

Pistillate spikes approximate and nearly sessile, at the top of the scape: or the lowest distant and stalked.

Perigynium with a stout 2-toothed beak: plants with glabrous foliage.

XXI. EXTENSAE.

Perigynium with a short entire beak or beakless: plants with pubescent foliage.

XXII. PALLESCENTES.

Pistillate spikes few-several-flowered, often loose.

Scales of the spike normal, neither elongated nor leaf-like.

Leaf-blades 2-36 mm. wide: bracts leaf-like, usually large.

Perigynia green.

Perigynia finely many-striate.

XXIII. OLIGOCARPAE.

Perigynia with few or many, mostly strong nerves.

XXIV. LAXIFLORAE.

Perigynia white, yellow or brown.

XXV. BICOLORES.

Leaf-blades, and stems, mostly capillary: bracts mere bladeless sheaths.

XXVI. DIGITATAE.

Scales of the spikes elongated, leaf-like.

XXX. PHYLLOSTACHYAE.

Perigynia pubescent.

Bracts mainly reduced to purple bladeless sheaths.

XXVII. PEDUNCULATAE.

Bracts various, not sheathing.

Perigynia mostly rounded.

XXVIII. MONTANAE.

Perigynia conspicuously 3-angled.

XXIX. TRIQUETRAE.

- †† Spike solitary, sometimes dioecious.
Scales of the spikes elongated, leaf-like.

XXX. PHYLLOSTACHYAE.

Scales of the spikes short, normal.

XXXI. LEPTOCEPHALAE.

- B. Staminate flowers few, at the summits or bases of the always sessile spikes, or sometimes forming whole spikes, or variously intermixed with the pistillate : stigmas always 2 : achene lenticular, compressed, ellipsoid or plano-convex. **VIGNEA**.

Staminate flowers at the summit of the spike.

Spike solitary, terminal.

XXXII. DIOICAE.

Spikes several, clustered.

XXXIII. FOETIDAE.

Spikes yellowish or brown at maturity, in compound or paniced clusters.

Perigynia strongly several-nerved, especially on the outer face.

XXXIV. VULPINAE.

Perigynia nerveless or faintly nerved.

XXXV. MULTIFLORAE.

Spikes green or greenish when mature, aggregated or separated, in simple clusters.

XXXVI. MUHLENBERGIANAE.

Staminate flowers at the base of the spike, variously intermingled with the pistillate in the spikes, or occasionally forming whole spikes.

Perigynia wingless, the inner face flat.

XXXVII. ELONGATAE.

Perigynia with narrow or broad marginal wings, the inner face concave.

XXXVIII. OVALES.

I. PAUCIFLORAE.

A single species in our range.

1. *C. pauciflora*.

II. LUPULINAE.

Pistillate spikes ovoid or globose, relatively few-flowered.

Perigynia subulate, reflexed when mature.

2. *C. Collinsii*.

Perigynia conic or ovoid, not reflexed.

Plants yellow or yellowish : perigynia little inflated.

Leaf-blades 2-4 mm. wide : staminate spike sessile.

3. *C. abacta*.

Leaf-blades 4-12 mm. wide : staminate spike mostly peduncled.

4. *C. folliculata*.

Plants green : perigynia well inflated.

Leaf-blades 4-6 mm. wide : spikes loosely flowered.

5. *C. intumescens*.

Leaf-blades 6-10 mm. wide : spikes dense.

6. *C. Asa-Grayi*.

Pistillate spikes oblong or cylindric, densely many-flowered.

Pistillate spikes oblong : achenes longer than thick.

7. *C. lupulina*.

Pistillate spikes cylindric : achenes not longer than thick.

8. *C. lupuliformis*.

III. VESICARIAE.

Spikes relatively small, 2.5 cm. long, or less, oblong to subglobose : stigmas often 2.

9. *C. oligosperma*.

Spikes relatively large, 2-15 cm. long, cylindric or oblong-cylindric : stigmas 3.

a. Scales acute, acuminate, or smooth-awned, or the lower ones with slightly roughened awns.

Perigynia ascending or spreading, not reflexed.

Spikes narrowly cylindric, 6-8 mm. thick, 2-15 cm. long.

Stems stout : leaf-blades 4-12 mm. wide. 10. *C. ultriculata*.

Stems slender : leaf-blades 2-5 mm. wide. 11. *C. monile*.

Spikes oblong-cylindric or cylindric, 12 mm. thick, 2-5 cm. long.

Scales with smooth awns. 12. *C. Tuckermanii*.

Scales merely acute or acuminate, or the upper blunt.

13. *C. bullata*.

Perigynia, at least the lower ones, reflexed at maturity.

Spikes clustered at the top of the scape, or the lower 1 or 2 separated :
perigynia all reflexed at maturity. 14. *C. retrorsa*.

Spikes scattered : perigynia at the base of the spikes reflexed.

15. *C. Hartii*.

b. Scales tapering into rough awns.

Spikes stout-cylindric, about 12 mm. thick : perigynium tapering into a
beak. 16. *C. lurida*.

Spikes narrowly cylindric, 6-8 mm. thick : perigynium abruptly narrowed
into a beak. 17. *C. Baileyi*.

IV. PSEUDOCYPERINAE.

Spikes erect or ascending.

18. *C. Schweinitzii*.

Spikes, at least the lower ones, slender-peduncled and drooping.

Pistillate spikes oblong-cylindric, 1-3 cm. long : perigynia ascending.

19. *C. hystericina*.

Pistillate spikes narrowly cylindric, 3-7 cm. long : perigynia reflexed.

Perigynium-beak with erect or slightly spreading teeth.

20. *C. Pseudo-Cyperus*.

Perigynium-beak with recurved teeth.

21. *C. comosa*.

V. SQUARROSAE.

Scales linear-subulate, longer than the perigynia.

22. *C. Frankii*.

Scales lanceolate, $\frac{1}{2}$ as long as the perigynia.

Spikes 1-3, subglobose or oval, staminate below : achenes linear-oblong.

23. *C. squarrosa*.

Spikes 2-6, oblong-cylindric, usually staminate at both ends : achenes ovoid.

24. *C. typhinoides*.

VI. PALUDOSAE.

Leaves bright green, not glaucous : teeth of the perigynium-beak slender, con-
spicuous.

25. *C. trichocarpa*.

Leaves pale green, glaucous : teeth of the perigynium-beak short.

26. *C. riparia*.

VII. SHORTIANAE.

A single species in our range.

27. *C. Shortiana*.

VIII. ANOMALAE.

A single species in our range.

8. *C. scabrata*.

IX. HIRTAE.

Staminate spike or spikes sessile or nearly so.

29. *C. vestita*.

Staminate spike or spikes distinctly stalked.

a. Leaves glabrous : native species.

Leaf-blades flat, or their margins slightly revolute.

30. *C. lanuginosa*.

Leaf-blades strongly revolute, 2 mm. wide or narrower.

31. *C. filiformis*.

b. Leaves, at least their sheaths, pubescent : naturalized species.

32. *C. hirta*.

X. ATRATAE.

A single species in our range.

33. *C. fusca*.

XI. RIGIDAE.

Lower leaf sheaths becoming very fibrillose.

34. *C. stricta*.

Lower leaf-sheaths not at all fibrillose or only sparingly so.

Scapes 3-6 dm. tall : scales acute or acuminate.

35. *C. Haydeni*.

Scapes 2-11 dm. tall : scales at least the upper ones obtuse.

Scales green.

36. *C. aquatilis*.

Scales brown or purple.

37. *C. Goodenovii*.

XII. PRASINAE.

Perigynia twisted toward the top : scales purple-brown.

38. *C. torta*.

Perigynia straight : scales green.

39. *C. prasina*.

XIII. PENDULINAE.

Pistillate spikes narrowly cylindric.

40. *C. littoralis*.

Pistillate spikes oblong or globular.

Perigynia surpassing the scales.

41. *C. limosa*.

Perigynia shorter than the scales.

42. *C. Magellanica*.

XIV. CRYPTOCARPAE.

Perigynia obovoid, obtuse.

43. *C. crinita*.

Perigynia oblong or elliptic, acute.

44. *C. gynandra*.

XV. VIRESCENTES.

Perigynia densely pubescent.

Pistillate spikes oblong-cylindric, 8-20 mm. long : perigynia oval or ovoid, few-nerved.

45. *C. virescens*.

Pistillate spikes narrowly cylindric, 12-36 mm. long : perigynia oblong, strongly many-nerved.

46. *C. costellata*.

Perigynia glabrous or nearly so, at least when mature.

Spikes 5-7 mm. thick : perigynia imbricated, flattened : top of the achene not bent.

47. *C. triceps*.

Spikes 3-4 mm. thick : perigynia not imbricated, swollen : top of the achene bent or tipped with a bent style.

48. *C. Caroliniana*.

XVI. GRACILLIMAE.

Perigynia 2 mm. long, slightly swollen : spikes linear or linear-cylindric.

Plants glabrous : perigynia obtuse.

49. *C. gracillima*.

Plants with pubescent sheaths : perigynia pointed at both ends.

50. *C. aestivalis*.

Perigynia 4-5 mm. long, manifestly swollen : spikes oblong or oblong-cylindric.

51. *C. Davisii*.

XVII. SYLVATICAE.

A single species in our range.

52. *C. longirostris*.

XVIII. DEBILES.

a. Perigynia membranous, few-nerved : pistillate spikes slender.

Perigynia $\frac{1}{2}$ longer than the scales : leaf-blades 5-10 mm. wide.

53. *C. arctata*.

Perigynia $\frac{1}{2}$ longer than the scales : leaf-blades 2-5 mm. wide.

54. *C. tenuis*.

b. Perigynia leathery, strongly many-nerved : spikes stouter.

55. *C. oblita*.

XIX. GRISEAE.

Leaves slightly or not at all glaucous

Pistillate spikes dense, usually many-flowered : leaf-blades 4-6 mm. wide, soft, spreading. 56. *C. grisea*.

Pistillate spikes loosely several-flowered : leaf-blades 2-4 mm. wide, mostly erect, rigid. 57. *C. amphibola*.

Leaves, or the whole plant, very glaucous.

58. *C. glaucodea*.

XX. GRANULARES.

Bracts elongated, mostly overtopping the spikes : perigynia strongly many-nerved.

Perigynia 2-3 mm. long.

59. *C. granularis*.

Perigynia 1-1.5 mm. long.

60. *C. Shriveri*.

Bracts short, rarely overtopping the spikes : perigynia finely few-nerved.

61. *C. Crawei*.

XXI. EXTENSAE.

Perigynia yellow, 4-6 mm. long, the beak about as long as the body : leaf-blades over 2 mm. wide.

62. *C. flava*.

Perigynia green, 2 mm. long, the beak $\frac{1}{2}$ as long as the body : leaf-blades less than 2 mm. wide.

63. *C. viridula*.

XXII. PALLESCENTES.

A single species in our range.

64. *C. pallescens*.

XXIII. OLIGOCARPAE.

Leaf-sheaths glabrous.

Perigynia narrowed at both ends, beakless.

65. *C. conoidea*.

Perigynia with short entire beaks.

66. *C. oligocarpa*.

Leaf-sheaths pubescent.

67. *C. Hitchcockiana*.

XXIV. LAXIFLORAE.

A. Plants not at all glaucous, or very slightly so.

Beak of the perigynium slender, straight.

68. *C. polymorpha*.

Beak of the perigynium bent, short or wanting.

a. Leaf-blades mostly narrow, 2-12 mm. wide.

Scales, at least the upper ones, obtuse.

Bracts elongated : spikes loosely flowered : stems and scapes slender.

69. *C. tetanica*.

Bracts short : spikes densely flowered : stems and scapes stout.

70. *C. Meadii*.

Scales acute, cuspidate, acuminate or awned.

Perigynia obtusely 3-angled.

Perigynia obovoid, 2.5-3 mm. long, the beak short, blunt, bent.

71. *C. laxiflora*.

Perigynia elliptic to oblong, 3-5 mm. long, the beak sharp.

Perigynia narrowly oblong, 4-5 mm. long, the beak oblique.

72. *C. styloflexa*.

Perigynia elliptic, 3-4 mm. long, the beak nearly straight.

73. *C. striatula*.

Perigynia sharply 3-angled.

Spikes drooping or spreading : leaf-blades 2-4 mm. wide : perigynia about as broad as long.

74. *C. digitalis*.

Spikes erect or nearly so : leaf-blades 6-12 mm. wide : perigynia about twice as long as broad.

75. *C. Careyana*.

b. Leaf-blades 12-36 mm. broad.

Bracts leaf-like, the upper one usually surpassing the inflorescence.

76. *C. Albursina*.

Bracts mostly reduced to bladeless sheaths.

77. *C. plantaginea*.

B. Plants distinctly glaucous.

Pistillate spikes drooping from hair-like peduncles. 78. *C. laxiculmis*.

Pistillate spikes erect.

Leaves much longer than the scapes.

79. *C. ptychocarpa*.

Leaves shorter than the scapes or about equalling them.

80. *C. platyphylla*.

XXV. BICOLORES.

A single species in our range.

81. *C. aurea*.

XXVI. DIGITATAE.

A single species in our range.

82. *C. setifolia*.

XXVII. PEDUNCULATAE.

A single species in our range.

83. *C. pedunculata*.

XXVIII. MONTANAE.

Plants not stoloniferous.

84. *C. pedicellata*.

Plants stoloniferous, the stolons sometimes short.

Scapes, or some of them, longer than the leaves.

Staminate spikes conspicuous, mostly over 6 mm. long.

Plant dark green: staminate spike very prominent: perigynia broadly oval.

85. *C. Pennsylvanica*.

Plant light green: staminate spike shorter: perigynia oblong.

86. *C. varia*.

Staminate spikes inconspicuous, mostly less than 6 mm. long.

87. *C. deflexa*.

88. *C. albicans*.

Scapes, or most of them, much shorter than the leaves.

Scales light green, with purple margins, or these never pale: perigynia oblong.

89. *C. nigro-marginata*.

Scales green with lighter scarious margins: perigynia oval.

90. *C. umbellata*.

XXIX. TRIQUETRAE.

A single species in our range.

91. *C. pubescens*.

XXX. PHYLLOSTACHYAE.

Body of the perigynium oblong; beak flattened.

92. *C. Wildenovii*.

Body of the perigynium globose; beak subulate.

93. *C. Jamesii*.

XXXI. LEPTOCEPHALAE.

A single species in our range.

94. *C. leptalea*.

XXXII. DIOICAE.

A single species in our range.

95. *C. Redowskyana*.

XXXIII. FOETIDAE.

A single species in our range.

96. *C. chordorhiza*.

XXXIV. VULPINAE.

Perigynium-beak shorter than the body.

97. *C. conjuncta*.

Perigynium-beak longer than the body or about as long.

98. *C. stipata*.

XXXV. MULTIFLORAE.

- Leaf-blades mostly less than 2 mm. wide. 99. *C. teretiuscula*.
 Leaf-blades mostly over 2 mm. wide.
 Scales acuminate, cuspidate or awned.
 Perigynia 3-5 mm. long. 100. *C. alopecoidea*.
 Perigynia 2-3 mm. long.
 Leaves as long as the stem or longer: perigynia dull yellow to brown. 101. *C. vulpinoidea*.
 Leaves shorter than the stem: perigynia bright yellow. 102. *C. xanthocarpa*.
 Scales blunt, scarious-tipped. 103. *C. Sartwellii*.

XXXVI. MUHLENBERGIANAE.

- Spikes 1-5-flowered, the lower at least much separated: perigynia nearly terete, ellipsoid. 104. *C. tenella*.
 Spikes several-many-flowered: perigynia flattened, lanceolate, ovate or roundish.
 Spikes separated or the upper approximate: perigynia mostly radiating or reflexed.
 Leaf-blades 1-3 mm. wide.
 Beak of the perigynium $\frac{1}{4}$ - $\frac{1}{2}$ as long as the body: native species of woodlands.
 Perigynia stellately radiating or ascending. 105. *C. rosea*.
 Perigynia reflexed, at least when mature. 106. *C. retroflexa*.
 Beak of the perigynium more than $\frac{1}{2}$ as long as the body: introduced species of fields. 107. *C. muricata*.
 Leaf-blades 5-9 mm. wide. 108. *C. sparganioides*.
 Spikes all aggregated or the lower separated: perigynia spreading or ascending.
 Leaf-blades relatively thin and lax, 4-8 mm. wide. 109. *C. cephaloidea*.
 Leaf-blades relatively stiff, 1-4 mm. wide.
 Perigynia 2 mm. long or shorter, nerveless or faintly few-nerved. 110. *C. cephalophora*.
 Perigynia 3 mm. long, strongly nerved or nerveless. 111. *C. Muhlenbergii*.

XXXVII. ELONGATAE.

- Perigynia radiately spreading or reflexed when mature.
 Perigynium distinctly nerved on both faces: beak rough.
 Perigynium lanceolate: beak more than $\frac{1}{2}$ as long as the body. 112. *C. sterilis*.
 Perigynium ovate: beak about $\frac{1}{3}$ as long as the body, abrupt. 113. *C. Atlantica*.
 Perigynium faintly nerved only on the outer face: beak smoothish. 114. *C. interior*.
 Perigynium appressed or ascending, at least not radiating.
 a. Perigynia ovate, oval, oblong or elliptic.
 Bracts short, scale-like or obsolete, or the lowest one sometimes surpassing its spike.
 Spikes silvery green or almost white. 115. *C. canescens*.
 Spikes brown or brownish. 116. *C. brunnescens*.
 Bracts bristle-form, elongated, much surpassing the 2-4 perigynia. 117. *C. trisperma*.

b. Perigynia lanceolate to ovate-lanceolate.

Spikes oblong or globular: perigynia nerveless. 118. *C. Deweyana*.

Spikes oblong-cylindric: perigynia strongly several-nerved

119. *C. bromoides*.

XXXVIII. OVALES.

Perigynia much longer than broad

Perigynia lanceolate to ovate-lanceolate, 2-5 times as long as wide.

Staminate flower intermixed with the pistillate: perigynia broadly winged.

120. *C. siccata*.

Staminate flowers all basal: perigynia narrowly winged.

Spikes oblong or oval: perigynia erect or ascending.

Spikes green-brown, blunt.

121. *C. tribuloides*.

Spikes bright brown, pointed.

122. *C. scoparia*.

Spikes globular: perigynia spreading at maturity.

123. *C. cristatella*.

Perigynia ovate, or if narrower not more than twice as long as broad.

Perigynia ascending or spreading.

Spikes silvery green.

124. *C. foenea*.

Spikes yellowish-brown or greenish.

125. *C. straminea*.

Perigynia erect or appressed.

126. *C. tenera*.

Perigynia about as broad as long or broader than long.

Spikes green-brown.

Perigynia spreading or ascending, 3-3.5 mm broad: achene sessile.

127. *C. festucacea*.

Perigynia erect, 4-5 mm. broad: achene stipitate.

128. *C. alata*.

Spikes silvery-green, but darkening in age.

129. *C. albolutescens*.

1. *Carex pauciflora* Lightf. FEW-FLOWERED SEDGE. (Man. p. 190; I. F. f. 671.) In bogs and meadows, Newf. to Alaska, Pa., Mich. and Wash.—*Pennsylvania*: SUSQUEHANNA, near Montrose; WAYNE, Terry Lake; PIKE; MONROE.

2. *Carex Collinsii* Nutt. COLLIN'S SEDGE. (Man. p. 191; I. F. f. 672.) In bogs, R. I. to eastern Pa. and Ga.—*Pennsylvania*: SCHUYLKILL, Broad Mountain; CHESTER.

3. *Carex abacta* Bailey. YELLOWISH SEDGE. (Man. p. 191; I. F. f. 673.) In bogs and wet meadows, Newf. to Mich. and Pa.—*Pennsylvania*: SUSQUEHANNA.

4. *Carex folliculata* L. LONG SEDGE. (Man. p. 191; I. F. f. 674.) In shaded swamps and wet woods, Newf. to Md., Mich. and W. Va.—*Pennsylvania*: MONROE; LUZERNE; SCHUYLKILL; NORTHAMPTON; BUCKS; LANCASTER; DELAWARE; CENTRE; VENANGO; SOMERSET; SUSQUEHANNA.

5. *Carex intumescens* Rudge. BLADDER SEDGE. (Man. p. 191; I. F. f. 675.) In damp thickets and wet places, Newf. to Man., Fla. and La.—*Pennsylvania*: MONROE; NORTHUMBERLAND; BUCKS; MONTGOMERY; CHESTER; LANCASTER; BLAIR; JEFFERSON; ARMSTRONG; SOMERSET; PIKE; LACKAWANNA; FRANKLIN; DELAWARE.

6. *Carex Asa-Grayi* Bailey. GRAY'S SEDGE. (Man. p. 191; I. F. f. 679.) In swamps and wet meadows, Vt. to Mich., Ga. and Mo.—*Pennsylvania*: DELAWARE; YORK; MERCER; ERIE; ALLEGHENY.

7. *Carex lupulina* Muhl. HOP SEDGE. (Man. p. 192; I. F. f. 678.) In swamps, Hudson Bay to Fla. and Tex.—*Pennsylvania*: MONROE; NORTHUMBERLAND; BERKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; FULTON; JEFFERSON.

8. *Carex lupuliformis* Sartwell. HOP-LIKE SEDGE. (Man. p. 192; I. F. f. 676.) Swamps, R. I. to Minn. and Del.—*Pennsylvania*: BUCKS; BRISTOL; CLEARFIELD; CRAWFORD; NORTHAMPTON; DELAWARE.

9. *Carex oligosperma* Michx. FEW-SEEDED SEDGE. (Man. p. 193; I. F. f. 681.) In bogs and meadows, Labrador to the N. W. Terr., Pa. and Mich.—*Pennsylvania*: CENTRE, near Penn Forest; CARBON, Round Pond; MONROE, Long Pond.

10. *Carex utriculata* Boott. BOTTLE SEDGE. (Man. p. 194; I. F. f. 687.) In marshes, Anticosti to B. C., Del., Minn., Nev. and Calif.—*Pennsylvania*: MONROE; PIKE; SUSQUEHANNA; WAYNE; SULLIVAN.

11. *Carex monile* Tuckerm. NECKLACE SEDGE. (Man. p. 194; I. F. f. 688.) In wet places, N. S. to B. C., N. J., Mo., in the Rocky Mts. to Col., and to Calif.—*Pennsylvania*: BUCKS, Sellersville; CHESTER; HUNTINGDON, Barrens; ELK; CRAWFORD; MERCER; MONROE; LANCASTER; PIKE.

12. *Carex Tuckermanii* Dewey. TUCKERMAN'S SEDGE (Man. p. 194; I. F. f. 689.) In bogs and meadows, N. B. to Ont., N. J., Mich. and Minn.—*Pennsylvania*: SUSQUEHANNA; MONROE; HUNTINGDON; CLEARFIELD; MERCER.

13. *Carex bullata* Schk. BUTTON SEDGE. (Man. p. 194; I. F. f. 690.) In swamps, Mass. to N. C.—*Pennsylvania*: SUSQUEHANNA; LYCOMING; LANCASTER, Smithville.

14. *Carex retrorsa* Schw. RETRORSE SEDGE. (Man. p. 194; I. F. f. 691.) In wet places, N. S. to Man., Mass., Pa. and Minn.—*Pennsylvania*: HUNTINGDON, near Penn Forest; BUCKS.

15. *Carex Hartii* Dewey. HART WRIGHT'S SEDGE. (Man. p. 194; I. F. f. 692.) In marshes, Ont. to Pa. and Mich.—*Pennsylvania*: SUSQUEHANNA.

16. *Carex lurida* Wahl. SALLOW SEDGE. (Man. p. 194; I. F. f. 693.) In wet places, N. S. to Minn., Fla. and Tex.—*Pennsylvania*: LUZERNE; MONROE; NORTHAMPTON; BUCKS; ELK; LANCASTER; CENTRE; BLAIR; CLEARFIELD; CLARION; SOMERSET; TIOGA; FRANKLIN; CHESTER; DELAWARE; ERIE.

16a. *C. lurida exudans* Bailey. (Man. p. 195.) HUNTINGDON, Alexandria; BLAIR; ELK.

16b. *C. lurida flaccida* Bailey. (Man. p. 195.) BUCKS.

16c. *C. lurida parvula* (Paine) Bailey. (Man. p. 195.) BUCKS; SUSQUEHANNA; CLARION.

17. *Carex Baileyi* Britton. BAILEY'S SEDGE. (Man. p. 195; I. F. f. 694.) Bogs, Vt. to Va. and Tenn.—*Pennsylvania*: WAYNE; MONROE; LUZERNE; HUNTINGDON; CLEARFIELD; SOMERSET; SUSQUEHANNA.

18. *Carex Schweinitzii* Dewey. SCHWEINITZ'S SEDGE. (Man. p. 195; I. F. f. 695.) In swamps, Mass. to Ont., Mich., N. J. and Mo.—*Pennsylvania*: MONROE; SUSQUEHANNA.

19. *Carex hystrix* Muhlb. PORCUPINE SEDGE. (Man. p. 195; I. F. f. 696.) In meadows or wet places, N. S. to the N. W. Terr., Ga. and Neb.—*Pennsylvania*: MONROE; NORTHUMBERLAND; BUCKS; CRAWFORD; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE.

20. *Carex Pseudo-Cyperus* L. CYPERUS-LIKE SEDGE. (Man. p. 195; I. F. f. 697.) In bogs, N. S. to Man., Me., N. Y. and Mich. Also in Eu. and Asia.—*Pennsylvania*: ERIE, Presque Isle.

21. *Carex comosa* Boott. BRISTLY SEDGE. (Man. p. 195; I. F. f. 698.) In swamps and along the borders of ponds, N. S. to Wash., Ga., La. and Calif.—*Pennsylvania*: WAYNE; LUZERNE; PIKE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; HUNTINGDON; CRAWFORD; ERIE, Presque Isle; FRANKLIN, Chambersburg.

22. *Carex Frankii* Kunth. FRANK'S SEDGE. (Man. p. 196; I. F. f. 699.) In wet places, Pa. to Mo., Ga. and La. and Tex.—*Pennsylvania*: GREENE; HUNTINGDON, Alexandria; YORK; CHESTER; SOMERSET; ERIE.

23. *Carex squarrosa* L. SQUARROSE SEDGE. (Man. p. 196; I. F. f. 700.) In swamps, Conn. to Mich., Neb., Ga., La. and Ark.—*Pennsylvania*: BUCKS; PHILADELPHIA; CHESTER; DELAWARE; LANCASTER; HUNTINGDON; ALLEGHENY; FRANKLIN.

24. *Carex typhinoidea* Schw. CAT-TAIL SEDGE. (Man. p. 196; I. F. f. 701.) In swamps, Quebec to Mo., Va. and La.—*Pennsylvania*: ADAMS, Fairfield; MONROE; PIKE; MERCER, Greenville.

25. *Carex trichocarpa* Muhlb. HAIRY-FRUITED SEDGE. (Man. p. 196; I. F. f. 702.) In wet places, Quebec to Mich., Kans., Ga. and Mo.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LANCASTER; SUSQUEHANNA; FRANKLIN; CENTRE; ELK.

26. *Carex riparia* Curtis. RIVER-BANK SEDGE. (Man. p. 197; I. F. f. 704.) In swamps and moist thickets, Newf. to James Bay and Man., Fla., Tex. and Idaho. Also in Eu.—*Pennsylvania*: WAYNE; MONROE; TIOGA; ELK; DELAWARE; PHILADELPHIA.

27. *Carex Shortiana* Dewey. SHORT'S SEDGE. (Man. p. 197; I. F. f. 706.) In moist meadows and thickets, Pa. to Mo., Va. and the I. Terr.—*Pennsylvania*: FRANKLIN, Mercersburg; LANCASTER, Cone-wago; CLEARFIELD.

28. *Carex scabrata* Schw. ROUGH SEDGE. (Man. p. 197; I. F. f. 707.) In moist woods and thickets, N. H. to Mich., S. C. and Tenn.—*Pennsylvania*: WAYNE; CARBON; MONROE; SUSQUEHANNA; NORTHAMPTON; BUCKS; CHESTER; PHILADELPHIA, on the Wissahickon; LANCASTER; FRANKLIN; SULLIVAN; BLAIR; SOMERSET; ALLEGHENY; ERIE.

29. *Carex vestita* Willd. VELVET SEDGE. (Man. p. 198; I. F. f. 708.) In sandy woods, Mass. to Ga.—*Pennsylvania*: MONROE; NORTH-

AMPTON, Pen Argyl; BUCKS, Bristol; DELAWARE, Tinicum; LANCASTER, Smithville; CLEARFIELD; CAMERON.

30. *Carex lanuginosa* Michx. WOOLLY SEDGE. (Man. p. 198; I. F. f. 711.) In wet places, N. S. to B. C., N. J., Kans., N. Mex. and Calif.—*Pennsylvania*: MONROE; BUCKS; CHESTER; BERKS; LANCASTER; FRANKLIN; ELK; DELAWARE.

31. *Carex filiformis* L. SLENDER SEDGE. (Man. p. 198; I. F. f. 712.) In wet places, Newf. to B. C., N. J., Mich. and Minn. Also in Eu.—*Pennsylvania*: MONROE, Delaware Water Gap; ERIE, Presque Isle; BUCKS; DELAWARE; SUSQUEHANNA.

32. *Carex hirta* L. HAIRY SEDGE. (Man. p. 198; I. F. f. 713.) In fields and waste places, Mass. to Pa. and Tenn. Nat. from Eu.—*Pennsylvania*: PHILADELPHIA.

33. *Carex fusca* All. BROWN SEDGE. (Man. p. 200; I. F. f. 718.) In bogs, Newf. to Alaska, to Ga., Ky., Utah and Calif. Also in Eu.—*Pennsylvania*: LEHIGH; BUCKS; LANCASTER; FRANKLIN; FULTON.

34. *Carex stricta* Lam. TUSsock SEDGE. (Man. p. 200; I. F. f. 719.) In swamps, Newf. to Ont., Ga. and Tex.—*Pennsylvania*: WAYNE; MONROE; CARBON; SCHUYLKILL; NORTHAMPTON; CHESTER; BERKS; LANCASTER; BUCKS; FRANKLIN; ELK; PIKE; DELAWARE; ERIE.

34a. *C. stricta angustata* (Boott) Bailey. (Man. p. 200.) WAYNE; NORTHAMPTON; LANCASTER; BUCKS; MONROE.

35. *Carex Haydenii* Dewey. HAYDEN'S SEDGE. (Man. p. 200; I. F. f. 720.) In swamps, N. B. to R. I. and Neb.—*Pennsylvania*: BUCKS; LYCOMING.

36. *Carex aquatilis* Wahl. WATER SEDGE. (Man. p. 200; I. F. f. 722.) In wet places, Newf. to Alaska, Mass., Pa., Ohio, Minn. and B. C.—*Pennsylvania*: ERIE, Presque Isle; DELAWARE.

37. *Carex Goodenovii* J. Gay. GOODENOUGH'S SEDGE. (Man. p. 201; I. F. f. 724.) In wet grounds, Newf. to Mass. and Pa.—*Pennsylvania*: MONROE, Delaware Water Gap; CENTRE; DELAWARE, Tinicum; BUCKS; CRAWFORD.

38. *Carex torta* Boott. TWISTED SEDGE. (Man. p. 202; I. F. f. 729.) In wet places, Me. and Vt. to N. C. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; DELAWARE; PERRY; FRANKLIN; FULTON; SULLIVAN; SUSQUEHANNA.

39. *Carex prasina* Wahl. DROOPING SEDGE. (Man. p. 202; I. F. f. 730.) In meadows and thickets, Vt. and Ont. to N. J. and Pa., and in the Alleghenies to Ga.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; BERKS; SULLIVAN; ELK; SOMERSET; ERIE; ALLEGHENY.

40. *Carex littoralis* Schw. BARRATT'S SEDGE. (Man. p. 202; I. F. f. 732.) In pine-barren swamps, L. I. and N. J. to N. C.—*Pennsylvania*: DELAWARE, Tinicum.

41. *Carex limosa* L. MUD SEDGE. (Man. p. 203; I. F. f. 734.) In bogs or ponds, Labrador to the N. W. Terr., Me., N. J., Ohio, Minn. and

Idaho. Also in Eu.—*Pennsylvania*: WAYNE; MONROE; TIOGA; BUCKS, near Sellersville; PIKE.

42. *Carex Magellanica* Lam. MAGELLAN SEDGE. (Man. p. 203; I. F. f. 735.) In bogs and wet meadows, Newf. to Labrador to Man., Me., Pa. and Mich. Also in Utah, in Eu. and in southern S. Am.—*Pennsylvania*: MONROE, Naomi Pines.

43. *Carex crinita* Lam. FRINGED SEDGE. (Man. p. 203; I. F. f. 739.) In wet places, N. S. and Ont. to Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; CHESTER; ELK; JEFFERSON; PIKE; TIOGA; FRANKLIN; DELAWARE; ERIE.

43a. *C. crinita minor* Boott. (Man. p. 204.) WAYNE; MONROE; CLEARFIELD; SUSQUEHANNA.

44. *Carex gynandra* Schw. NODDING SEDGE. (Man. p. 204; I. F. f. 740.) In swamps, N. S. to N. Y., Fla. and La.—*Pennsylvania*: WAYNE; LACKAWANNA; MONROE; LUZERNE; SCHUYLKILL; NORTHAMPTON; CHESTER; TIOGA; CLEARFIELD; ARMSTRONG; PIKE.

45. *Carex virescens* Muhl. DOWNY GREEN SEDGE. (Man. p. 204; I. F. f. 743.) In dry woods and thickets, Me. to Mich., N. C. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; PHILADELPHIA; SUSQUEHANNA; TIOGA; FRANKLIN; SOMERSET; PIKE; ALLEGHENY.

46. *Carex costellata* Britton. RIBBED SEDGE. (Man. p. 204; I. F. f. 744.) In woods, Me. and Ont. to N. C.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; MONROE; SCHUYLKILL; HUNTINGDON; CARBON; PERRY; LANCASTER; DELAWARE; ALLEGHENY.

47. *Carex triceps* Michx. HIRSUTE SEDGE. (Man. p. 205; I. F. f. 745.) In woods, fields and swamps, Mass. to Ont., Mich., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; MONROE; BUCKS; PHILADELPHIA; CHESTER; DELAWARE; LANCASTER; LYCOMING; FRANKLIN; TIOGA; BLAIR; MONTGOMERY; JEFFERSON; ALLEGHENY.

48. *Carex Caroliniana* Schw. CAROLINA SEDGE. (Man. p. 205; I. F. f. 746.) In meadows, N. J. and Pa. to N. C. and Ark.—*Pennsylvania*: DELAWARE; PHILADELPHIA.

49. *Carex gracillima* Schw. GRACEFUL SEDGE. (Man. p. 205; I. F. f. 747.) In moist woods and meadows, N. S. to Man., N. C., Ohio and Mich.—*Pennsylvania*: NORTHAMPTON; LEHIGH; BUCKS; CHESTER; LANCASTER; MONTGOMERY; FRANKLIN; BLAIR; MERCER; PIKE; SOMERSET; DELAWARE; ALLEGHENY.

50. *Carex aestivalis* M. A. Curtis. SUMMER SEDGE. (Man. p. 205; I. F. f. 748.) In mountain woods, Mass. and N. Y. to Ga.—*Pennsylvania*: CHESTER; LACKAWANNA; SULLIVAN; TIOGA; WAYNE.

51. *Carex Davisii* Schw. & Torr. DAVIS' SEDGE. (Man. p. 206; I. F. f. 751.) In moist thickets and meadows, Mass. to Minn., Ga., Ky. and I. Terr.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; LANCASTER; FRANKLIN; PIKE; CHESTER.

52. *Carex longirostris* Torr. LONG-BEAKED SEDGE. (Man. p. 206; I. F. f. 752.) On shaded banks and in moist thickets, N. B. to the N. W.

Terr., Mass., Tenn., Mich. and Neb.—*Pennsylvania*: LYCOMING; SUSQUEHANNA; MONROE; BUCKS.

53. *Carex arctata* Boott. DROOPING WOOD SEDGE. (Man. p. 207; I. F. f. 756.) In dry woods and thickets, N. B. to Minn., Pa. and Mich.—*Pennsylvania*: MONROE; BLAIR; CLEARFIELD; SULLIVAN; BUCKS, Penn Valley; CRAWFORD.

53a. *C. arctata Faxonii* Bailey. (Man. p. 207.) SUSQUEHANNA.

54. *Carex tenuis* Rudge. SLENDER-STALKED SEDGE. (Man. p. 207; I. F. f. 757.) In woods, Newf. to Mich., Va., the mountains of N. C. and Ky.—*Pennsylvania*: MONROE; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; CENTRE; BLAIR; CLEARFIELD; MERCER; JEFFERSON.

54a. *C. tenuis interjecta* (Bailey) Britton. (Man. p. 207.) MONROE; CENTRE; BLAIR.

54b. *C. tenuis pubera* (A. Gray). CENTRE; LANCASTER, Smithville.

55. *Carex oblita* Steud. DARK-GREEN SEDGE. (Man. p. 207; I. F. f. 758.) In bogs, N. Y. and Pa. to N. J. and N. C.—*Pennsylvania*: LACKAWANNA.

56. *Carex grisea* Wahl. GRAY SEDGE. (Man. p. 207; I. F. f. 759.) In woods and thickets, Me. to Minn., N. C. and Kans.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; BLAIR; SUSQUEHANNA; ALLEGHENY; SOMERSET; PIKE; DELAWARE.

57. *Carex amphibola* Steud. NARROW-LEAVED SEDGE. (Man. p. 207; I. F. 760.) In dry soil, N. J. to Pa. to Mo., Fla. and Tex.—*Pennsylvania*: BUCKS, bog S. E. of Sellersville; DELAWARE, Tinicum.

58. *Carex glaucoidea* Tuckerm. GLAUDESCENT SEDGE. (Man. p. 208; I. F. f. 762.) In open fields, Mass. to Pa., Ill., Va. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LYCOMING; FULTON; MONTGOMERY; FRANKLIN; ALLEGHENY.

59. *Carex granularis* Muhl. MEADOW SEDGE. (Man. p. 208; I. F. f. 763.) In bogs or meadows, N. B. to Man., Fla. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; PHILADELPHIA.

60. *Carex Shriveri* Britton. SHRIVER'S SEDGE. (Man. p. 208.) In meadows, N. Y. to Mich. and Va.—*Pennsylvania*: NORTHAMPTON, Easton.

61. *Carex Crawei* Dewey. CRAWE'S SEDGE. (Man. p. 208; I. F. f. 764.) In moist meadows and on shaded banks, Quebec to Man., Pa. and Tenn.—*Pennsylvania*: CLINTON.

62. *Carex flava* L. YELLOW SEDGE. (Man. p. 208; I. F. f. 766.) In wet places, Newf. to the N. W. Terr., R. I., N. J., Pa., Ohio and Mont. Also in Eu.—*Pennsylvania*: CRAWFORD, Conneaut Lake.

63. *Carex viridula* Michx. GREEN SEDGE. (Man. p. 209; I. F. f. 767.) In meadows and bogs, on wet rocks, Newf. to the N. W. Terr. Me., Pa., Minn., Utah and Wash.—*Pennsylvania*: ERIE, Presque Isle.

64. *Carex pallescens* L. PALE SEDGE. (Man. p. 209; I. F. f. 768.) In fields, N. S. to Ont., R. I., Pa., Ill. and Wis. Also in Eu.—*Pennsylvania*: WAYNE; LACKAWANNA; MONROE; LUZERNE; CLINTON; SUSQUEHANNA; BUCKS, Penn Valley; CRAWFORD.

65. *Carex conoidea* Schk. FIELD SEDGE. (Man. p. 210; I. F. f. 770.) In meadows, U. S. to Ont., R. I., N. J., Ohio and Ill.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CENTRE; BERKS; LANCASTER; FRANKLIN; LYCOMING.

66. *Carex oligocarpa* Schk. FEW-FRUITED SEDGE. (Man. p. 210; I. F. f. 771.) In dry woods and thickets, Vt. to Mich., N. J., W. Va., Ky. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER.

67. *Carex Hitchcockiana* Dewey. HITCHCOCK'S SEDGE. (Man. p. 210; I. F. f. 772.) In woods and thickets, Vt. to Mich., N. J., W. Va., Ky. and Mo.—*Pennsylvania*: NORTHAMPTON; LACKAWANNA; LANCASTER; ALLEGHENY.

68. *Carex polymorpha* Muhl. VARIABLE SEDGE. (Man. p. 210; I. F. f. 774.) In wet places, Mass. to northern N. J., N. C.—*Pennsylvania*: MONROE; LANCASTER.

69. *Carex tetanica* Schk. WOOD'S SEDGE. (Man. p. 210; I. F. f. 775.) In grassy meadows and wet woods, Ont. to Man., N. C. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LANCASTER; FRANKLIN.

70. *Carex Meadii* DEWEY. MEAD'S SEDGE. (Man. p. 211; I. F. f. 776.) In wet places, R. I. to Ga., Assiniboia, Neb. and Ark.—*Pennsylvania*: BUCKS; DELAWARE; LANCASTER.

71. *Carex laxiflora* Lam. LOOSE-FLOWERED SEDGE. (Man. p. 211; I. F. f. 777.) In meadows and thickets, Me. to Minn., Fla., Ala. and I. Terr.—*Pennsylvania*: LUZERNE; MONROE; NORTHAMPTON; BUCKS; LANCASTER; SUSQUEHANNA; BLAIR; LYCOMING; MERCER; SOMERSET.

71a. *C. laxiflora blanda* (Dewey) Boott. (Man. p. 211.) PIKE; MONTGOMERY; DELAWARE; FRANKLIN.

71b. *C. laxiflora patulifolia* (Dewey) Carey. (Man. p. 211.) MONROE; NORTHAMPTON; SUSQUEHANNA; ERIE; HUNTINGDON; DELAWARE; FRANKLIN; LANCASTER; SOMERSET.

72. *Carex styloflexa* Buckl. BENT SEDGE. (Man. p. 211; I. F. f. 778.) In woods and thickets, N. Y. and Pa. to Fla., La. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; BERKS; MONTGOMERY; DELAWARE; LANCASTER; FRANKLIN.

73. *Carex striatula* Michx. STRIATE-FRUITED SEDGE. In woods, meadows and thickets, Ont. to Ohio, Fla. and Miss.—*Pennsylvania*: LANCASTER.

74. *Carex digitalis* Willd. SLENDER WOOD SEDGE. (Man. p. 211; I. F. f. 779.) In woods and thickets, Me. to Minn., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; TIOGA; YORK; ELK; SOMERSET; ERIE; ALLEGHENY; PHILADELPHIA; MONTGOMERY; PIKE.

75. *Carex Careyana* Torr. CAREY'S SEDGE. (Man. p. 211; I. F. f. 780.) In woods, N. Eng. to Mich. and Va.—*Pennsylvania*: ALLEGHENY.

76. *Carex Albursina* Sheldon. WHITE BEAR SEDGE. (Man. p. 212; I. F. f. 781.) In woods, Mass. to Minn., Va. and Ohio.—*Pennsylvania*: BUCKS; LANCASTER; ALLEGHENY.

77. *Carex plantaginea* Lam. PLANTAIN-LEAVED SEDGE. (Man. p. 212; I. F. f. 782.) In woods, N. B. to Man., Va. and Wis.—*Pennsylvania*: BUCKS, Nockamixon; CHESTER, near Pleasantville; SULLIVAN; SUSQUEHANNA; BLAIR; CLEARFIELD; ALLEGHENY; SOMERSET; ERIE.

78. *Carex laxiculmis* Schw. SPREADING SEDGE. (Man. p. 212; I. F. f. 783.) In woods and thickets, Ont. to Mich., R. I. and Va.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; LANCASTER; FRANKLIN; CENTRE; SOMERSET; DELAWARE; PIKE.

79. *Carex ptychocarpa* Steud. THICKET SEDGE. (Man. p. 212; I. F. f. 784.) In moist woods and thickets, Mass. to Fla. and La.—*Pennsylvania*: BUCKS, Bristol; DELAWARE, Tinicum.

80. *Carex platyphylla* Carey. BROAD-LEAVED SEDGE. (Man. p. 212; I. F. f. 785.) In woods and thickets, Quebec to Mich., Va. and Ill.—*Pennsylvania*: MONROE; BUCKS; CHESTER; LANCASTER; SULLIVAN; SUSQUEHANNA; FULTON; FRANKLIN; CENTRE; SOMERSET; ALLEGHENY.

81. *Carex aurea* Nutt. GOLDEN-FRUITED SEDGE. (Man. p. 212; I. F. f. 788.) In wet places, Newf. to B. C., Mass., Pa., Utah and Wash. *Pennsylvania*: ERIE, Presque Isle.

82. *Carex setifolia* (Dewey) Britton. BRISTLE-LEAVED SEDGE. (Man. p. 213; I. F. f. 790.) In dry or rocky soil, preferring limestone rocks, N. B. to the N. W. Terr., Pa., Kan. and Neb.—*Pennsylvania*: NORTHAMPTON, Easton; LACKAWANNA, Campbell's Ledge.

83. *Carex pedunculata* Muhl. LONG-STALKED SEDGE. (Man. p. 214; I. F. f. 793.) In dry woods, Anticosti to Man., Va. and Minn.—*Pennsylvania*: LACKAWANNA; BUCKS; BERKS; LANCASTER; FRANKLIN; SULLIVAN; JEFFERSON; CLINTON; ERIE; ALLEGHENY.

84. *Carex pedicellata* (Dewey) Britton. FIBROUS-ROOTED SEDGE. (Man. p. 215; I. F. f. 794.) In dry soil, N. S. to Minn., Ga., Ohio and Mich.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; LANCASTER; CAMBRIA; ALLEGHENY; PIKE; SOMERSET.

85. *Carex Pennsylvanica* Lam. PENNSYLVANIA SEDGE. (Man. p. 215; I. F. f. 797.) In dry soil on rocks, N. B. to the N. W. Terr., N. C., Tenn. and Kan.—*Pennsylvania*: LEHIGH; MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; DELAWARE; CLEARFIELD; LUZERNE; SUSQUEHANNA; FRANKLIN; ERIE.

86. *Carex varia* Muhl. EMMON'S SEDGE. (Man. p. 214; I. F. f. 796.) In dry soil on rocks, N. S. to Man., Ga. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; BERKS; SCHUYLKILL; LANCASTER; FRANKLIN; SULLIVAN; BLAIR; CENTRE; CLEARFIELD; ALLEGHENY; DELAWARE; SUSQUEHANNA; SOMERSET.

87. *Carex deflexa* Hornem. NORTHERN SEDGE. (Man. p. 214; I. F. f. 798.) In open places, N. S. to Ont. and Pa., mostly in high altitudes.—*Pennsylvania*: MONROE, Pocono Summit.

88. *Carex albicans* Willd. WHITISH SEDGE. (Man. p. 215.) In dry soil, N. Eng. to Pa.—*Pennsylvania*: BUCKS, Tullytown.

89. *Carex nigro-marginata* Schw. BLACK-EDGED SEDGE. (Man. p. 215; I. F. f. 800.) Dry soil, N. Y. to N. C.—*Pennsylvania*: NORTHAMPTON; BUCKS; SOMERSET; MONTGOMERY, Willow Grove.

90. *Carex umbellata* Schk. UMBEL-LIKE SEDGE. (Man. p. 215; I. F. f. 801.) Dry or arid soil, N. S. to the N. W. Terr., N. J., the I. Terr. and Ore.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; LANCASTER; LYCOMING; SULLIVAN; SUSQUEHANNA; ERIE.

91. *Carex pubescens* Muhl. PUBESCENT SEDGE. (Man. p. 215; I. F. f. 802.) In woods, N. S. to N. Dak., N. J., Ky. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; SUSQUEHANNA; CLEARFIELD; ERIE; MONTGOMERY; ALLEGHENY.

92. *Carex Willdenovii* Schk. WILLDENOW'S SEDGE. (Man. p. 216; I. F. f. 806.) In dry soil or woods, Mass. to Man., Fla.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; LYCOMING; SOMERSET.

93. *Carex Jamesii* Schw. JAMES' SEDGE. (Man. p. 216; I. F. f. 807.) In dry soil, southern Ont. and N. Y. to Mich., W. Va. and Mo.—*Pennsylvania*: LANCASTER; DAUPHIN; ALLEGHENY.

94. *Carex leptalea* Wahl. BRISTLE-STALKED SEDGE. (Man. p. 217; I. F. f. 811.) In wet places, Newf. to B. C., Fla., Tex., Col. and Ore.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; SULLIVAN; SUSQUEHANNA; HUNTINGDON; SOMERSET; ERIE.

95. *Carex Redowskyana* C. A. Meyer. REDOWSKY'S SEDGE. (Man. p. 217; I. F. f. 815.) In bogs or meadows, Labrador to the N. W. Terr., Vt., Pa., Mich., and in the Rocky Mts. to Col.—*Pennsylvania*:

96. *Carex chordorhiza* L.f. CREEPING SEDGE. (Man. p. 218; I. F. f. 817.) In wet meadows and bogs, Anticosti to the N. W. Terr., Me., N. Y., northern Pa., Ill. and Iowa. Also in Eu.—*Pennsylvania*: TIOGA, Marsh Farm near Willsboro, 1869.

97. *Carex conjuncta* Boott. SOFT FOX SEDGE. (Man. p. 219; I. F. f. 822.) In moist meadows and thickets, N. J., Pa., to Ky., Ill. and Minn.—*Pennsylvania*: PHILADELPHIA.

98. *Carex stipata* Muhl. AWL-FRUITED SEDGE. (Man. p. 219; I. F. f. 823.) In wet places, Newf. to B. C., Fla., Tenn., N. Mex. and Calif.—*Pennsylvania*: WAYNE; NORTHAMPTON; BUCKS; PHILADELPHIA, CHESTER; LANCASTER; SULLIVAN; SUSQUEHANNA; CENTRE; HUNTINGDON; ALLEGHENY; PIKE; TIOGA; SOMERSET.

99. *Carex teretiuscula* Gooden. LESSER PANICLED SEDGE. (Man. p. 219; I. F. f. 827.) In wet places, N. S. to B. C., R. I. to Pa. and Neb.—*Pennsylvania*: TIOGA; MONROE.

99a. *C. teretiuscula prairea* (Dewey) Britton. (Man. p. 220.) LANCASTER, Dillerville Swamp; CENTRE, Bear Meadows; CRAWFORD.

100. *Carex alopecoidea* Tuckerm. FOXTAIL SEDGE. (Man. p. 220; I. F. f. 828.) In meadows, N. Y. and Pa. to Man.—*Pennsylvania*: LANCASTER; CLEARFIELD; ELK.

101. *Carex vulpinoidea* Michx. FOX SEDGE. (Man. p. 220; I. F. f. 830.) In meadows or wet places, N. B. to Man., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; MONROE; BUCKS; CHESTER; LANCASTER; FRANKLIN; TIOGA; HUNTINGDON; BLAIR; CAMBRIA; DELAWARE; CRAWFORD; ALLEGHENY.

102. *Carex xanthocarpa* Bicknell. YELLOW-FRUITED SEDGE. (Man. p. 220; I. F. f. 831.) In fields, Mass. to Pa. and Ohio.—*Pennsylvania*: BUCKS; MONROE; LYCOMING; ERIE.

102a. *C. xanthocarpa annectens* Bicknell. (Man. p. 220.) MONROE; BUCKS.

103. *Carex Sartwellii* Dewey. SARTWELL'S SEDGE. (Man. p. 220; I. F. f. 833.) In swamps, Ont. to B. C., N. Y., Pa., Ill., Ark. and Utah.—*Pennsylvania*: ERIE, Presque Isle.

104. *Carex tenella* Schk. SOFT-LEAVED SEDGE. (Man. p. 221; I. F. f. 834.) In meadows or bogs, Newf. to B. C., N. J., Pa., Mich., Colo. and Calif.—*Pennsylvania*: TIOGA; ELK.

105. *Carex rosea* Schk. STELLATE SEDGE. (Man. p. 221; I. F. f. 835.) In woods and on dry slopes, Newf. to Man., N. C., Neb. and Mo.—*Pennsylvania*: MONROE; LACKAWANNA; NORTHAMPTON; BUCKS; MONTGOMERY; CHESTER; LANCASTER; YORK; FRANKLIN; SUSQUEHANNA; SOMERSET; PIKE; DELAWARE.

105a. *C. rosea radiata* Dewey. (Man. p. 221.) WAYNE; MONROE; BUCKS; CHESTER; LANCASTER; FRANKLIN; CLEARFIELD; PIKE; ERIE.

106. *Carex retroflexa* Muhl. REFLEXED SEDGE. (Man. p. 221; I. F. f. 836.) In woods, Mass. to Ont., Mich., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; DELAWARE; LANCASTER; SUSQUEHANNA; WAYNE; ALLEGHENY.

107. *Carex muricata* L. LESSER PRICKLY SEDGE. (Man. p. 222; I. F. f. 838.) In meadows and fields, Mass. to Ohio and Va.—*Pennsylvania*: NORTHAMPTON, College Hill, Easton.

108. *Carex sparganioides* Muhl. BUR-REED SEDGE. (Man. p. 222; I. F. f. 839.) In woods, Mass. to Mich., Va. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; PHILADELPHIA; LANCASTER; FRANKLIN; SUSQUEHANNA; HUNTINGDON; ALLEGHENY; SOMERSET.

109. *Carex cephaloidea* Dewey. THIN-LEAVED SEDGE. (Man. p. 222; I. F. f. 840.) In dry fields and on hills, Mass. to Pa., Mich. and Wyo.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER.

110. *Carex cephalophora* Muhl. OVAL-HEADED SEDGE. (Man. p. 222; I. F. f. 841.) In dry or stony fields and on hills, Me. to Man., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS;

CHESTER; PHILADELPHIA; MONTGOMERY; LANCASTER; FRANKLIN; CLEARFIELD; ELK; SOMERSET; DELAWARE; ALLEGHENY.

111. *Carex Muhlenbergii* Schk. MUHLENBERG'S SEDGE. (Man. p. 222; I. F. f. 843.) In dry fields and on hills, Mass. to Mich., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; MONROE; PHILADELPHIA; HUNTINGDON; LANCASTER; PIKE.

111a. *C. Muhlenbergii* *Xalapensis* (Kunth.) Britton. (Man. p. 222.) NORTHAMPTON; BUCKS; PHILADELPHIA.

112. *Carex sterilis* Willd. LITTLE PRICKLY SEDGE. (Man. p. 223; I. F. f. 844.) In sandy or moist soil, Newf. to B. C., Fla., La., Colo. and Calif.—*Pennsylvania*: MONROE; WAYNE; NORTHAMPTON; BUCKS; MONTGOMERY; CHESTER; BERKS; LANCASTER; FRANKLIN; SUSQUEHANNA; HUNTINGDON; DELAWARE.

112a *C. sterilis* *cephalantha* Bailey. (Man. p. 223.) WAYNE; MONROE; LYCOMING; SCHUYLKILL; CHESTER; LANCASTER.

113. *Carex Atlantica* Bailey. EASTERN SEDGE. (Man. p. 223; I. F. f. 845.) In meadows or swamps, Newf. to Fla.—*Pennsylvania*: BUCKS, Tullytown.

114. *Carex interior* Bailey. INLAND SEDGE. (Man. p. 223; I. F. f. 846.) In wet soil, Me. to Minn., Fla. and Kans.—*Pennsylvania*: LANCASTER, Dillerville Swamp; BUCKS; PIKE; SOMERSET; DELAWARE.

114a. *C. interior* *capillacea* Bailey. (Man. p. 223.) NORTHAMPTON, Bangor; MONROE; LUZERNE, Glen Summit; PIKE; WAYNE.

115. *Carex canescens* L. SILVERY SEDGE. (Man. p. 223; I. F. f. 847.) In wet places, Newf. to B. C., Va., Mich. and Ore. Also in Eu. and Asia.—*Pennsylvania*: WAYNE; MONROE; SCHUYLKILL; SULLIVAN; JEFFERSON; CAMBRIA; NORTHAMPTON; SOMERSET; PIKE; ERIE; SUSQUEHANNA.

116. *Carex brunnescens* (Pers.) Poir. BROWNISH SEDGE. (Man. p. 224; I. F. f. 848.) In wet places, mostly at high altitudes, Labrador to B. C., N. Y. and N. Eng., on the southern Alleghenies and the Rocky Mountains.—*Pennsylvania*: WAYNE; MONROE; SUSQUEHANNA; CENTRE.

117. *Carex trisperma* Dewey. THREE-FRUITED SEDGE. (Man. p. 225; I. F. f. 855.) In wet places, Newf. to Man., Md., Ohio and Neb.—*Pennsylvania*: WAYNE; SUSQUEHANNA; MONROE; SULLIVAN; CENTRE; SOMERSET; TIOGA; PIKE.

118. *Carex Deweyana* Schw. DEWEY'S SEDGE. (Man. p. 225; I. F. f. 856.) In dry woods, N. S. to Ore., Conn., Pa., Mich., N. Mex. and Utah.—*Pennsylvania*: SULLIVAN; SUSQUEHANNA; WAYNE.

119. *Carex bromoides* Schk. BROME-LIKE SEDGE. (Man. p. 225; I. F. f. 857.) In wet places, N. S. to Mich., Fla. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; FRANKLIN; SULLIVAN; SUSQUEHANNA; HUNTINGDON; JEFFERSON; LANCASTER; SOMERSET.

120. *Carex siccata* Dewey. DRY SPIKED SEDGE. (Man. p. 226; I. F. f. 860.) In dry fields and on hills, Ont. to B. C., R. I., N. Y., Mich., Ariz. and Calif.—*Pennsylvania*: NORTHAMPTON, Bethlehem.

121. *Carex tribuloides* Wahl. BLUNT BROOM SEDGE. (Man. p. 226; I. F. f. 862.) In meadows, N. B. to Man., Fla. and Ariz.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; TIOGA; SUSQUEHANNA; HUNTINGDON; JEFFERSON; SOMERSET; FRANKLIN; DELAWARE; ERIE; ALLEGHENY.

121a. *C. tribuloides* Bebbii Bailey. (Man. p. 226.) BUCKS; FRANKLIN; JEFFERSON.

122. *Carex scoparia* Schk. POINTED BROOM SEDGE. (Man. p. 226; I. F. f. 863.) In bogs or moist soil, N. S. to Man., Fla. and Col.—*Pennsylvania*: NORTHAMPTON; MONROE; BUCKS; CHESTER; PHILADELPHIA; LANCASTER; FRANKLIN; COLUMBIA; SUSQUEHANNA; HUNTINGDON; ALLEGHENY; MONTGOMERY; SOMERSET; ERIE.

123. *Carex cristatella* Britton. CRESTED SEDGE. (Man. p. 227; I. F. f. 865.) In meadows and low thickets, N. B. to Man., Mass., Pa., Ill. and Neb.—*Pennsylvania*: NORTHAMPTON; LANCASTER; YORK; LYCOMING; HUNTINGDON; BLAIR.

124. *Carex foenea* Willd. HAY SEDGE. (Man. p. 227; I. F. f. 867.) In dry woods, often on rocks, N. B. to Pa., Minn. and B. C.—*Pennsylvania*: LACKAWANNA; MONROE; NORTHAMPTON; SUSQUEHANNA; VENANGO; SOMERSET; BUCKS; PIKE; CHESTER.

124a. *C. foenea perplexa* Bailey. (Man. p. 227.) NORTHAMPTON; PIKE.

125. *Carex straminea* Willd. STRAW SEDGE. (Man. p. 227; I. F. f. 868.) In dry fields, N. B. to Man., Pa., Mich. and probably further south.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONROE; LANCASTER; CHESTER; DELAWARE; ERIE.

125a. *C. straminea mirabilis* (Dewey) Tuckerm. (Man. p. 227.) MONROE.

126. *Carex tenera* Dewey. MARSH STRAW SEDGE. (Man. p. 227; I. F. f. 870.) In wet soil, Me. to Ont. to Va. and La.—*Pennsylvania*: FRANKLIN; LYCOMING; ELK; BUCKS; DELAWARE.

126a. *C. tenera invis*a (W. Boott) Britton. (Man. p. 228.) DELAWARE.

127. *Carex festucacea* Willd. FESCUE SEDGE. (Man. p. 228; I. F. f. 871.) In dry to moist soil, N. B. to Minn., Fla. and Kans.—*Pennsylvania*: FRANKLIN; NORTHAMPTON; DELAWARE; BUCKS; CRAWFORD.

128. *Carex alata* Torr. BROAD-WINGED SEDGE. (Man. p. 228; I. F. f. 872.) In moist soil, Mass. to Fla., mostly near the coast.—*Pennsylvania*: BUCKS; BRISTOL; MONTGOMERY.

129. *Carex albolutescens* Schw. GREENISH WHITE SEDGE. (Man. p. 228; I. F. f. 873.) In wet soil, mostly along salt meadows, but also from N. B. to eastern Pa. and Fla.—*Pennsylvania*: MONROE, Pocono and Tannersville; BUCKS.

Order 6. ARALES.

Plants terrestrial or aquatic with the flowers in a spadix, which is sometimes subtended by or partly enclosed in a spathe. Fam. 1. ARACEAE.

Plants reduced to small floating thalloid structures, with one or few flowers in a minute pouch. Fam. 2. LEMNACEAE.

FAMILY 1. ARACEAE Neck. ARUM FAMILY.

Flowers monoecious or dioecious, or the lower ones perfect (*Calla*): perianth wanting.

Leaf-blades 3-many-divided or foliolate: axis of the spadix naked above.

1. ARISAEMA.

Leaf-blades simple: axis of the spadix completely covered with flowers.

Spathe wholly or partially convolute: flowers monoecious.

2. PELTANDRA.

Spathe not convolute: lower flowers perfect.

3. CALLA.

Flowers perfect: perianth of several scale-like members.

Spadix surrounded by a spathe.

4. SPATHYEMA.

Spadix naked, merely subtended by a spathe.

5. ORONTIUM.

Spadix terminating the club-shaped scape.

Spadix borne somewhat laterally on the leaf-like scape. 6. ACORUS.

1. ARISAEMA Mart.

Leaf-blades palmately 3-divided: spathe involute below, hooded above: spadix included, terete or obscurely angled.

Spathe with the convolute part even.

1. *A. triphyllum*.

Spathe with the convolute part fluted.

2. *A. Stewardsonii*.

Leaf-blades pedately divided: spathe convolute throughout: spadix exserted, more or less flattened or 2-edged.

3. *A. Dracontium*.

1. *Arisaema triphyllum* (L.) Torr. JACK-IN-THE-PULPIT. INDIAN TURNIP. (Man. p. 229; I. F. f. 876.) In moist woods, N. S. to Fla., Minn., Kans. and La.—*Pennsylvania*: NORTHAMPTON; MONROE; SCHUYLKILL; CHESTER; LANCASTER; FRANKLIN; DELAWARE.

2. *Arisaema Stewardsonii* Britton. STEWARDSON BROWN'S INDIAN TURNIP. (Man. p. 1045.) In wet woods, eastern Pa.—*Pennsylvania*: MONROE, Tannersville; SULLIVAN.

2. *Arisaema Dracontium* (L.) Schott. GREEN DRAGON. (Man. p. 230; I. F. f. 877.) Mostly in wet woods, Me. to Minn., Fla. and Tex.—*Pennsylvania*: ERIE; SUSQUEHANNA; LANCASTER; CHESTER; DELAWARE; ALLEGHENY.

2. PELTANDRA Raf.

1. *Peltandra Virginica* (L.) Kunth. GREEN ARROW-ARUM. (Man. p. 230; I. F. f. 878.) In swamps or shallow water, Me. to Mich., Fla. and La.—*Pennsylvania*: MONROE, Tannersville; DAUPHIN, Harrisburg; DELAWARE, Tinicum; PIKE; CHESTER; ERIE.

3. CALLA L.

1. *Calla palustris* L. WATER ARUM. (Man. p. 230; I. F. f. 880.) In bogs, N. S. to Minn., Va. and Iowa.—*Pennsylvania*: ERIE; MONROE; NORTHAMPTON; PIKE; SUSQUEHANNA.

4. **SPATHYEMA** Raf.

1. *Spathyema foetida* (L.) Raf. SKUNK CABBAGE. (Man. p. 231; I. F. f. 881.) In swamps, N. S. to Minn., Fla. and Iowa.—*Pennsylvania*: HUNTINGDON; LANCASTER; NORTHAMPTON; FRANKLIN; CHESTER; DELAWARE; ALLEGHENY.

5. **ORONTIUM** L.

1. *Orontium aquaticum* L. GOLDEN CLUB. (Man. p. 231; I. F. f. 882.) In swamps and ponds, Mass. to Pa., Fla. and La., mostly near the coast.—*Pennsylvania*: NORTHAMPTON; MONROE; LANCASTER; CUMBERLAND; CHESTER; HUNTINGDON; DELAWARE; LACKAWANNA; SOMERSET; PIKE.

6. **ACORUS** L.

1. *Acorus Calamus* L. SWEET FLAG. CALAMUS-ROOT. (Man. p. 231; I. F. f. 883.) In wet places, N. S. to Minn., La. and Kans. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA, Point Breeze; MONROE; FRANKLIN; DELAWARE; COLUMBIA; ALEGHENY.

FAMILY 2. **LEMNACEAE** Dumort. DUCKWEED FAMILY.

Plant-body much elongated or subglobose, not disk-like, rootless: propagative pouches solitary. 1. **WOLFFIA**.

Plant-body disk-like, with 1 or several roots: propagative pouches 2.

Plant-body inconspicuously nerved: roots solitary on each plant, without a fibro-vascular bundle. 2. **LEMNA**.

Plant-body conspicuously nerved: roots several, each with a fibro-vascular bundle. 3. **SPIRODELA**.

1. **WOLFFIA** Horkel.

Plant-body smooth, somewhat flattened above, gibbous beneath, abundantly brown-punctate. 1. *W. punctata*.

Plant-body ellipsoidal or globose, with 2-3 papules on dorsal surface, not punctate. 2. *W. Columbiana*.

1. *Wolffia punctata* Griseb. PUNCTATE WOLFFIA. (Man. p. 234.) On the surface of stagnant waters, east of the Mississippi River from the Lake region to the Gulf of Mexico.—*Pennsylvania*: According to Britton, Man. p. 234.

2. *Wolffia Columbiana* Karst. COLUMBIA WOLFFIA. (Man. p. 233; I. F. f. 890.) Floating on water, Ont. to N. J., Minn. and Mo., Mex. and S. Am.—*Pennsylvania*: PHILADELPHIA; BUCKS.

2. **LEMNA** L.

Plant-bodies long-stipitate, forming large submerged masses. 1. *L. trisulca*.

Plant-bodies sessile or short-stipitate, floating, more or less detached.

Plant-body symmetrical or nearly so. 2. *L. minor*.

Plant-body unsymmetrical. 3. *L. perpusilla*.

1. *Lemna trisulca* L. IVY-LEAVED DUCKWEED. (Man. p. 232; I. F. f. 885.) In still or flowing water, N. S. to Pacific coast, N. J. and N. Mex., also in Eu., Asia, Africa and Australia.—*Pennsylvania*: LANCASTER; NORTHAMPTON; MERCER; CHESTER.

2. *Lemna minor* L. LESSER DUCKWEED. (Man. p. 233; I. F. f. 888.) In ponds, lakes and stagnant waters throughout N. Am. Also in Eu., Asia, Africa and Australia.—*Pennsylvania*: NORTHAMPTON; DELAWARE; LANCASTER; DAUPHIN; HUNTINGDON; PHILADELPHIA; CHESTER.

3. *Lemna perpusilla* Torr. MINUTE DUCKWEED. (Man. p. 233; I. F. f. 887.) In ponds, rivers, springs, N. Y. and N. J. to Minn., Neb. and Mo.—*Pennsylvania*: NORTHAMPTON.

3. SPIRODELA Schleid.

1. *Spirodela polyrrhiza* (L.) Schleid. GREATER DUCKWEED. (Man. p. 232; I. F. f. 884.) In rivers, ponds, and shallow lakes, N. S. to B. C., S. C., Mex. and Nev. In the Old World and in tropical Am.—*Pennsylvania*: PHILADELPHIA; NORTHAMPTON; YORK; DAUPHIN; HUNTINGDON; BUCKS; LANCASTER; CHESTER; DELAWARE.

Order 7. XYRIDALES.

Ovary 1-celled, with parietal placentae: inflorescence without a spathe.

Fam. 1. XYRIDACEAE.

Ovary 2-3-celled, if incompletely so or if nearly 1-celled then the flowers in a spathe.

Flowers minute, monoecious or dioecious, in dense heads each seated in an imbricated involucre.

Fam. 2. ERIOCAULACEAE.

Flowers conspicuous or relatively so, perfect.

Calyx and corolla free, of very different members: stamens free.

Fam. 3. COMMELINACEAE.

Calyx and corolla of quite similar members and partially united: stamens partially adnate to the perianth.

Fam. 4. PONTEDERICEAE.

FAMILY 1. XYRIDACEAE Lindl. YELLOW-EYED GRASS FAMILY.

1. XYRIS.

Lateral sepals wingless, the keel fringed with short hairs. 1. *X. flexuosa*.

Lateral sepals winged, the keel fimbriate or lacerate.

Heads oblong, 3-6 mm. long.

2. *X. montana*.

Heads ovoid or oval, 8-16 mm. long.

3. *X. Caroliniana*.

1. *Xyris flexuosa* Muhl. SLENDER YELLOW-EYED GRASS. (Man. p. 235; I. F. f. 893.) In wet places, Me. to Minn., Ga. and Tex.—*Pennsylvania*: MONTGOMERY; DELAWARE; BERKS; LANCASTER.

2. *Xyris montana* H. Ries. NORTHERN YELLOW-EYED GRASS. (Man. p. 235; I. F. f. 894.) In bogs, N. S. to Mich., and in the mountains of Pa. and N. J.—*Pennsylvania*: MONROE; LACKAWANNA.

3. *Xyris Caroliniana* Walt. CAROLINA YELLOW-EYED GRASS. (Man. p. 236; I. F. f. 896.) In wet places, Mass. to Fla. and La., mostly near the coast.—*Pennsylvania*: MONROE; DELAWARE; LANCASTER; YORK; CARBON; CHESTER.

FAMILY 2. **ERIOCAULACEAE** Lindl. PIPEWORT FAMILY.

1. **ERIOCAULON** L.

Sheath at the base of the scape longer than the leaves or about as long: scapes usually 7-ridged. 1. *E. septangulare*.

Sheath at the base of the scape shorter than the leaves: scape 10-14-ridged.

2. *E. decangulare*.

1. **Eriocaulon septangulare** With. SEVEN-ANGLED PIPEWORT. (Man. p. 237; I. F. f. 899.) In still water and on shores, Newf. to Minn., south to Fla. and Tex.—*Pennsylvania*: CARBON; MONROE; LACKAWANNA; LUZERNE; PHILADELPHIA; SUSQUEHANNA.

2. **Eriocaulon decangulare** L. TEN-ANGLED PIPEWORT. (Man. p. 237; I. F. f. 901.) In swamps, N. J. and Pa. to Fla. and Tex.—*Pennsylvania*: According to Britton, Man. p. 237.

FAMILY 3. **COMMELINACEAE** Reichenb. SPIDERWORT FAMILY.

Petals alike in shape: perfect stamens 6 or rarely 5. 1. TRADESCANTIA.

Petals unequal in size and shape: perfect stamens 3 or rarely 2.

2. COMMELINA.

1. **TRADESCANTIA** L.

Leaf-blades linear or linear-lanceolate, 12-50 times longer than wide, more or less involutely folded. 1. *T. Virginiana*.

Leaf-blades lanceolate, 5-10 times longer than broad, flat. 2. *T. pilosa*.

1. **Tradescantia Virginiana** L. SPIDERWORT. (Man. p. 241; I. F. f. 910.) In rich soil, mostly in woods, N. Y. to Ohio and S. Dak., Va. and Ark.—*Pennsylvania*: DELAWARE; LANCASTER; FRANKLIN; BUCKS; CHESTER; DELAWARE; ALLEGHENY.

2. **Tradescantia pilosa** J. G. C. Lehm. ZIGZAG SPIDERWORT. (Man. p. 242; I. F. f. 913.) Pa. to Mo. and Fla.—*Pennsylvania*: PHILADELPHIA, Bartram's Garden.

2. **COMMELINA** L.

Spathes not united at the base.

Spathes acuminate: capsules 3-celled, 5-seeded.

1. *C. nudiflora*.

Spathes acute: capsules 2-celled, 4-seeded.

2. *C. communis*

Spathes with the bases united.

All three cavities of the ovary with 2 ovules.

Capsule 2-valved, the dorsal cavity indehiscent.

3. *C. Virginica*.

Capsule 3-valved, all the cavities dehiscent.

4. *C. erecta*.

Ventral cavities of the ovary with 2 ovules, dorsal cavity with 1 ovule.

5. *C. hirtella*.

1. **Commelina nudiflora** L. CREEPING DAY-FLOWER. (Man. p. 239; I. F. f. 905.) Along streams and in waste places, N. J. to Mo., Fla., Tex. and through tropical Am. to Paraguay.—*Pennsylvania*: CHESTER; DELAWARE, Tinicum.

2. **Commelina communis** L. ASIATIC DAY-FLOWER. (Man. p. 240; I. F. f. 907.) N. Y. and Pa. Adv. or nat. from Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; DAUPHIN, Harrisburg; PERRY; LANCASTER BEAVER.

3. *Commelina Virginica* L. VIRGINIA DAY-FLOWER. (Man. p. 240; I. F. f. 909.) In moist soil, N. Y. to Ill. and Mich., Fla., Tex. and probably through tropical Am. to Paraguay.—*Pennsylvania*: LANCASTER, Safe Harbor; FRANKLIN; DAUPHIN.

4. *Commelina erecta* L. SLENDER DAY-FLOWER. (Man. p. 240; I. F. f. 908.) In moist soil, Pa. to Fla., Tex., and in tropical Am.—*Pennsylvania*: LANCASTER.

5. *Commelina hirtella* Vahl. BEARDED DAY-FLOWER. (Man. p. 240; I. F. f. 906.) In moist soil, N. J. to Mo., Fla. and Tex.—*Pennsylvania*: LANCASTER, on the Susquehanna; YORK, York Furnace.

FAMILY 4. **PONTEDERACEAE** Dumort. PICKEREL-WEED FAMILY.

Stamens 3, or rarely 1-4: perianth regular: fruit capsular. 1. HETERANTHERA.
Stamens 6: perianth irregular: fruit utricular. 2. PONTEDERIA.

1. HETERANTHERA R. & P.

Leaves not differentiated into blade and petiole, linear: perianth yellow.

1. *H. dubia*.

Leaves differentiated into petiole and blade: perianth white or blue.

2. *H. reniformis*.

1. *Heteranthera dubia* (Jacq.) MacM. WATER STAR-GRASS. (Man. p. 243; I. F. f. 918.) In still water, Ont. to Ore., Fla. and Mex. Also in Cuba.—*Pennsylvania*: NORTHAMPTON; BUCKS; HUNTINGDON; FRANKLIN; LANCASTER; DAUPHIN; CHESTER; DELAWARE; ERIE.

2. *Heteranthera reniformis* R. & P. MUD PLANTAIN. (Man. p. 243; I. F. f. 916.) In mud or shallow water, Conn. to N. J., Ill. and Kans., La. and in Central and S. Am.—*Pennsylvania*: NORTHAMPTON; BUCKS; BERKS; LANCASTER; DAUPHIN; FRANKLIN; YORK; CHESTER; DELAWARE.

2. PONTEDERIA L.

1. *Pontederia cordata* L. PICKEREL-WEED. (Man. p. 243; I. F. f. 915.) The borders of ponds and streams, N. S. to Minn., Fla. and Tex. *Pennsylvania*: NORTHAMPTON; MONROE; LANCASTER; YORK; SUSQUEHANNA; CRAWFORD; CHESTER; LEHIGH; DELAWARE; ERIE.

1a. *P. cordata lancefolia* (Muhl.) Morong. (Man. p. 243.) MONROE; LEHIGH.

ORDER 8. LILIALES.

Styles present, distinct or united: stigmas terminal.

Sepals and petals chaffy.

Fam. 1. JUNCACEAE.

Sepals and petals not chaffy.

Styles distinct: capsule septicidal and rarely also loculicidal.

Fam. 2. MELANTHACEAE.

Styles united: capsule primarily loculicidal.

Plants with bulbs, corms or woody caudices. Fam. 3. LILIACEAE.

Plants with elongated rootstocks.

Fam. 4. CONVALLARIACEAE.

Styles wanting: stigmas introrse, sometimes elongated.

Flowers perfect.

Fam. 5. TRILLIACEAE.

Flowers dioecious.

Fam. 6. SMILACACEAE.

FAMILY I JUNCACEAE Vent. RUSH FAMILY.

Leaf-sheaths open : capsules 1- or 3-celled with axile or parietal placentae : seeds many.

1. JUNCUS.

Leaf-sheaths closed : capsules 1-celled with basal placentae : seeds 3.

2. JUNCOIDES.

1. JUNCUS L.

The plants inhabit low moist or swampy places.

Lowest bract of the inflorescence terete, not markedly channeled, erect, appearing like a continuation of the scape, the inflorescence thus appearing lateral.

Sepals and petals green, or straw-colored in age.

Stamens 3 : sepals and petals about as long as the capsule : petals acute or acuminate : capsules of an obovoid type.

1. *J. effusus*.

Stamens 6 : sepals and petals about $\frac{1}{2}$ as long as the capsule, or the sepals much longer : capsules of an ovoid type.

Sepals longer than the capsule : petals acute or acuminate.

2. *J. filiformis*.

Sepals about $\frac{1}{2}$ as long as the capsule : petals obtuse.

3. *J. gymnocarpus*.

Sepals and petals with a chestnut-brown stripe on both sides of the midrib.

4. *J. Balticus*.

Lowest bract of the inflorescence not appearing like a continuation of the scape (or if so, markedly channeled along the inner side), the inflorescence therefore usually appearing terminal.

A. Leaf-blades with their flat surfaces facing the stem, or terete and channeled, not provided with node-like septa.

Flowers bibracteolate, inserted singly on the branches of the inflorescence, sometimes clustered, but never in true heads.

Leaf-blades flat, but sometimes involute in drying so as to appear terete.

(See also *J. dichotomus* below.)

Annual : inflorescence, exclusive of its bracts, more than $\frac{1}{3}$ the height of the plant : anthers shorter than the filaments.

5. *J. bufonius*.

Perennial : inflorescence, exclusive of its bracts, less than $\frac{1}{3}$ the height of the plant.

Auricles at the summit of the leaf-sheath membranous or scarious, whitish :

Auricles membranous, scarcely scarious, rarely if at all prolonged beyond the point of insertion.

6. *J. secundus*.

Auricles scarious, markedly prolonged beyond the point of insertion.

7. *J. tenuis*.

Auricles at the summit of the leaf-sheath cartilaginous, yellow to yellow-brown.

8. *J. Dudleyi*.

Leaf-blades terete, channeled along the upper side.

Lowest bract less than 4 times the length of the inflorescence : capsule oblong or obovoid, with the ordinary dehiscence.

9. *J. dichotomus*.

Lowest bract rarely less than 4 times the length of the inflorescence : capsule globose-ovoid, breaking up irregularly in age.

10. *J. setaceus*.

Flowers not bibracteolate, in true heads on the branches of the inflorescence.

11. *J. marginatus*.

B. Leaf-blades either terete and not channeled or flattened or compressed, with the flat surfaces not facing the stem provided with septa.

Stamens 6, one opposite each sepal and petal.

Heads reduced to one or rarely 2 flowers. 12. *J. pelocarpus*.

Heads 2-many-flowered.

Plants with both normal and submerged capillary leaves.

13. *J. militaris*.

Plants destitute of capillary submerged leaves.

Capsule of an oblong type, abruptly acuminate or blunt-pointed.

Panicle-branches widely spreading: capsule narrowly acute, conspicuously tipped. 14. *J. articulatus*.

Panicle-branches mostly strict: capsule broadly acute or obtuse, short-tipped. 15. *J. Richardsonianus*.

Capsule of a subulate type.

Petals longer than the sepals: leaf-blades erect.

16. *J. nodosus*.

Petals shorter than the sepals: leaf-blades abruptly spreading.

17. *J. Torreyi*.

Stamens 3, none opposite the petals.

Capsule tapering to a prominent subulate beak. 18. *J. scirpoides*.

Capsule obtuse or merely acute at the apex, sometimes mucronulate, but not beaked.

Seeds 0.7-2.5 mm. long, narrowed into tails at both ends.

Perianth about 2 mm. long: mature heads mostly less than 4 mm. high. 19. *J. brachycephalus*.

Perianth 3-4 mm. long: mature heads mostly more than 4 mm. high.

20. *J. Canadensis*.

Seeds 0.35-0.55 mm. long, apiculate at both ends.

21. *J. acuminatus*.

1. *Juncus effusus* L. COMMON RUSH. BOG RUSH. (Man. p. 246; I. F. f. 919.) Nearly throughout N. Am., except the high northern portions. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; CHESTER; MONROE; SCHUYLKILL; CARBON; LANCASTER; FRANKLIN; BUCKS; ERIE; JEFFERSON; DELAWARE; ALLEGHENY.

2. *Juncus filiformis* L. THREAD RUSH. (Man. p. 247; I. F. f. 921.) Labrador to B. C. and the mountains of Pa., also to Mich. and in the Rocky Mountains to Utah and Colo.—*Pennsylvania*: MONROE, Naomi Pines, Long Pond.

3. *Juncus gymnocarpus* Coville. PENNSYLVANIA RUSH. (Man. p. 247; I. F. f. 922.) Pa. and Fla.—*Pennsylvania*: SCHUYLKILL, Broad Mt.

4. *Juncus Balticus* Willd. BALTIC RUSH. (Man. p. 247; I. F. f. 923.) Lab. to Alaska, Pa., Ohio and Neb., and far south in the western mountains. Also in Eu. and Asia.—*Pennsylvania*: LANCASTER, Dillerville Swamp; ERIE.

5. *Juncus bufonius* L. TOAD RUSH. (Man. p. 247; I. F. f. 926.) A cosmopolitan species, occurring throughout N. Am. except in the extreme north, and frequenting dried-up pools, stream-borders and dry roadsides.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER; ERIE; PIKE; CHESTER; DELAWARE.

6. *Juncus secundus* Beauv. SECOND RUSH. (Man. p. 248; I. F. f. 930.) N. J. and Pa. to N. C. Also in the Miss. valley.—*Pennsylvania*: BUCKS; LANCASTER; COLUMBIA.

7. *Juncus tenuis* Willd. SLENDER OR YARD RUSH. (Man. p. 248; I. F. f. 929.) Throughout N. Am.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; DELAWARE; LANCASTER; PERRY; FRANKLIN; HUNTINGDON; MONROE; COLUMBIA; CARBON; ERIE; ALLEGHENY; JEFFERSON; PHILADELPHIA; LACKAWANNA.

8. *Juncus Dudleyi* Wiegand. DUDLEY'S RUSH. (Man. p. 1046.) Me. to Sask., Wash., Pa. and Mex.—*Pennsylvania*: MONROE.

9. *Juncus dichotomus* Ell. FORKED RUSH. (Man. p. 249; I. F. f. 933.) Me. to Fla. and Tex., mostly near the coast.—*Pennsylvania*: BUCKS, Bristol; DELAWARE, Tinicum; MONTGOMERY.

10. *Juncus setaceus* Rostk. AWL-LEAVED RUSH. (Man. p. 249; I. F. f. 934.) Del. to Fla. and Tex., near the coast, extending north in the Miss. Valley to Mo.—*Pennsylvania*: DELAWARE.

11. *Juncus marginatus* Rostk. GRASS-LEAVED RUSH. (Man. p. 249; I. F. f. 935.) Me. to Ont., Fla. and Neb.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; HUNTINGDON; FRANKLIN; PHILADELPHIA; YORK; LACKAWANNA; MONTGOMERY.

12. *Juncus pelocarpus* E. Meyer. BROWNISH-FRUITED RUSH. (Man. p. 250; I. F. f. 942.) Newf. to N. J. and Minn.—*Pennsylvania*: MONROE, Tobyhanna Mills; LUZERNE, Lily Lake.

13. *Juncus militaris* Bigel. BAYONET RUSH. (Man. p. 250; I. F. f. 944.) N. S. to N. Y. and Md.—*Pennsylvania*: PIKE, Twelve Mile Pond; CARBON.

14. *Juncus articulatus* L. JOINTED RUSH. (Man. p. 251; I. F. f. 945.) Lab. to Mass., Pa., Mich. and B. C. Also in Eu. and Asia.—*Pennsylvania*: ERIE.

15. *Juncus Richardsonianus* Schult. RICHARDSON'S RUSH. (Man. p. 251; I. F. f. 946.) N. S. to B. C., Pa., Neb. and Wash.—*Pennsylvania*: ERIE.

16. *Juncus nodosus* L. KNOTTED RUSH. (Man. p. 251; I. F. f. 947.) N. S. to Va., Neb. and B. C. Also in Nev.—*Pennsylvania*: NORTHAMPTON; LANCASTER; BLAIR; ERIE; BUCKS.

17. *Juncus Torreyi* Coville. TORREY'S RUSH. (Man. p. 251; I. F. f. 948.) N. Y. to Tex. and the Pacific Coast.—*Pennsylvania*: ERIE, Presque Isle.

18. *Juncus scirpoides* Lam. SCIRPUS-LIKE RUSH. (Man. p. 251; I. F. f. 952.) N. Y. to Fla and La.—*Pennsylvania*: LANCASTER, Tucquan; DELAWARE, Tinicum; BUCKS; YORK; MONTGOMERY.

19. *Juncus brachycephalus* (Engelm.) Buckl. SMALL-FRUITED RUSH. (Man. p. 252; I. F. f. 954.) N. Y. to Wis., Pa. and Ill.—*Pennsylvania*: LANCASTER; ERIE, Presque Isle; CENTRE.

20. *Juncus Canadensis* J. Gay. CANADA RUSH. (Man. p. 252; I. F. f. 955.) N. B. to Minn., Ga. and La.—*Pennsylvania*: MONROE;

NORTHAMPTON; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; ERIE.

20a. *J. Canadensis subcaudatus* Engelm. (Man. p. 252.) NORTHAMPTON; BUCKS; HUNTINGDON; ALLEGHENY.

20b. *J. Canadensis brevicaudatus* Engelm. (Man. p. 252.) LANCASTER; MONROE; LACKAWANNA; SCHUYLKILL; CARBON; ERIE.

21. *Juncus acuminatus* Michx. SHARP-FRUITED RUSH. (Man. p. 252; I. F. f. 956.) Me. to Minn., Ga. and Mex. Also on the northwest coast. — *Pennsylvania*: NORTHAMPTON; PHILADELPHIA; CHESTER; MONROE; DELAWARE; LUZERNE; HUNTINGDON; ERIE; JEFFERSON; LANCASTER; BUCKS; FRANKLIN; PIKE; ALLEGHENY.

21a. *J. acuminatus debilis* (A. Gray) Engelm. (Man. p. 252.) LANCASTER.

2. JUNCOIDES Adans.

Peduncles terminated by 1 or rarely 2 flowers: capsule of an ovoid type.

1. *J. pilosum*.

Peduncles terminated by compact spikes: capsule of an obovoid type.

2. *J. campestris*.

1. *Juncoides pilosum* (L.) Kuntze. HAIRY WOOD-RUSH. (Man. p. 253; I. F. f. 959.) N. B. to Alaska, N. Y., Mich. and Ore., and in the Alleghenies to Ga.—*Pennsylvania*: LANCASTER; MONROE; SULLIVAN; MERCER; SUSQUEHANNA; ERIE; SOMERSET.

2. *Juncoides campestris* (L.) Kuntze. COMMON WOOD-RUSH. (Man. p. 254; I. F. f. 965.) In woodlands, throughout U. S. and Br. Am. Also in Eu. and Asia. — *Pennsylvania*: NORTHAMPTON; MONROE; DELAWARE; LANCASTER; FRANKLIN; ALLEGHENY; VENANGO; SOMERSET; CHESTER.

FAMILY 2. MELANTHACEAE R. Br. BUNCH-FLOWER FAMILY.

Anthers oblong or ovoid, 2-celled.

1. CHAMAEIRIUM.

Anthers cordate or reniform, sometimes becoming peltate, confluent 1-celled.

Sepals and petals glandless.

Inflorescence racemose or spicate: flowers perfect. 2. CHROSPERMA.

Inflorescence paniculate: flowers polygamous.

Ovary wholly superior: hypanthium scarcely developed: sepals and petals obtuse. 3. VERATRUM.

Ovary inferior at the base: hypanthium manifestly developed: sepals and petals acuminate. 4. STENANTHIUM.

Sepals and petals with glands at or near the base. 5. MELANTHIUM.

1. CHAMAEIRIUM Willd.

1. *Chamaelirium luteum* (L.) A. Gray. BLAZING-STAR. (Man. p. 257; I. F. f. 972.) In moist meadows and thickets, Mass. to Mich., Fla. and Ark.—*Pennsylvania*: NORTHAMPTON; LANCASTER; HUNTINGDON; DELAWARE; ALLEGHENY.

2. CHROSPERMA Raf.

1. *Chrosperma muscaetoxicum* (Walt.) Kuntze. FLY-POISON. (Man. p. 257; I. F. f. 973.) In dry sandy woods, L. I. and Pa. to Fla. and

Ark.—*Pennsylvania*: MONROE; SCHUYLKILL; LEBANON; LANCASTER; CHESTER; CARBON; PHILADELPHIA; PIKE.

3. VERATRUM L.

1. *Veratrum viride* Ait. AMERICAN WHITE HELLEBORE. INDIAN POKE. (Man. p. 259; I. F. f. 984.) In swamps, Quebec to Alaska, Ga., Minn. and B. C.—*Pennsylvania*: MONROE; SCHUYLKILL; NORTHAMPTON; LANCASTER; FRANKLIN; BUCKS; BLAIR; LEBANON; PERRY; LUZERNE; DELAWARE, Media; CHESTER; ERIE.

4. STENANTHIUM Kunth.

1. *Stenanthium robustum* S. Wats. STOUT STENANTHIUM. (Man. p. 257; I. F. f. 985.) In moist soil, Pa. and Ohio to S. C. and Tenn.—*Pennsylvania*: LANCASTER; CLARION; ARMSTRONG; ALLEGHENY.

5. MELANTHIUM L.

Blades of the sepals and petals oblong, entire: leaf-blades linear or nearly so.

1. *M. Virginicum*.

Blades of the sepals and petals suborbicular, undulate or crisped: leaf-blades manifestly broadest above the middle.

2. *M. latifolium*.

1. *Melanthium Virginicum* L. BUNCH-FLOWER. (Man. p. 259; I. F. f. 981.) In meadows and wet woods, R. I. to N. Y., Minn., Fla. and Tex.—*Pennsylvania*: LANCASTER; ALLEGHENY; HUNTINGDON; FRANKLIN; CHESTER; DELAWARE.

2. *Melanthium latifolium* Desr. CRISPED BUNCH-FLOWER. (Man. p. 259; I. F. f. 982.) In dry woods and on hills, Conn. to Pa. and S. C.—*Pennsylvania*: NORTHAMPTON; BUCKS; DAUPHIN; HUNTINGDON; MONROE; ARMSTRONG.

FAMILY 3. LILIACEAE Adans. LILY FAMILY.

Herbs with bulbs or corms.

Flowers in umbels, at first included in, later subtended by a scarious involucre.

1. ALLIUM.

Flowers solitary or racemose, sometimes whorled, without an involucre.

Sepals and petals distinct.

Anthers not introrse.

Anthers versatile.

2. LILIUM.

Anthers erect.

Flower erect: capsule columnar: seed flat.

3. TULIPA.

Flower nodding: capsule obovoid: seed globular.

4. ERYTHRONIUM.

Anthers introrse.

Filaments filiform.

5. QUAMASIA.

Filaments flattened.

6. ORNITHOGALUM.

Sepals and petals more or less united.

Perianth urn-shaped, with tooth-like lobes.

7. MUSCARI.

Perianth funnellform, with spreading lobes.

8. HEMEROCALLIS.

Shrubby plants with woody caudices.

9. YUCCA.

1. ALLIUM L.

Ovule 1 in each cavity.

1. *A. tricoccum*.

Ovules 2 in each cavity.

Bulbs with membranous outer coats.

Umbel horizontal or nodding during anthesis: plants scapose.

2. *A. cernuum*.

Umbel erect: plants caulescent.

Sepals not keeled: inner filaments toothed under the anthers.

3. *A. vineale*.

Sepals keeled: inner filaments not toothed.

4. *A. carinatum*.

Bulbs with fibrous outer coats.

5. *A. Canadense*.

1. **Allium tricoccum** Ait. WILD LEEK. (Man. p. 262; I. F. f. 992.) In rich woods, N. B. to Minn., N. C. and Tenn.—*Pennsylvania*: PHILADELPHIA, Wissahickon; DELAWARE; LANCASTER; DAUPHIN; BERKS; BLAIR; CLEARFIELD; ALLEGHENY; SOMERSET; BUCKS; ERIE.

2. **Allium cernuum** Roth. NODDING WILD ONION. (Man. p. 263; I. F. f. 994.) On banks and hillsides, N. Y. to Minn. and B. C., W. Va., Ky., S. Dak., and in the Rocky Mts. to N. Mex.—*Pennsylvania*: HUNTINGDON; FRANKLIN; LANCASTER; PERRY; ALLEGHENY.

3. **Allium vineale** L. WILD OR FIELD GARLIC. (Man. p. 263; I. F. f. 996.) In fields and meadows, Conn. to Ohio, Mo. and Va. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; DELAWARE; ALLEGHENY.

4. **Allium carinatum** L. KEELED GARLIC. (Man. p. 1046.) In fields, eastern Pa. Introduced from Eu.—*Pennsylvania*: BUCKS.

5. **Allium Canadense** L. MEADOW GARLIC. (Man. p. 263; I. F. f. 997.) In meadows and thickets, Me. to Minn., Fla., La. and Ark.—*Pennsylvania*: LANCASTER; HUNTINGDON; FRANKLIN; DELAWARE; YORK; ALLEGHENY.

2. LILIUM L.

Flower or flowers erect: sepals and petals narrowed into claws.

1. *L. Philadelphicum*.

Flower or flowers horizontal or nodding: sepals and petals without claws.

Leaf-blades finely roughened on the margins and nerves beneath: sepals and petals not recurved.

2. *L. Canadense*.

Leaf-blades smooth: sepals and petals recurved.

3. *L. superbum*.

1. **Lilium Philadelphicum** L. RED OR WOOD LILY. (Man. p. 265; I. F. f. 1003.) In dry woods, Me. to Ont., N. C. and W. Va.—*Pennsylvania*: MONROE; TIOGA; HUNTINGDON; SOMERSET; FRANKLIN; LANCASTER; LACKAWANNA; PIKE; NORTHAMPTON; CHESTER; DELAWARE.

2. **Lilium Canadense** L. WILD YELLOW LILY. CANADA LILY. (Man. p. 265; I. F. f. 1006.) In swamps and meadows, N. S. to Minn., Ga. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; FRANKLIN; LUZERNE; HUNTINGDON; VENANGO; SOMERSET; LANCASTER; CHESTER; ALLEGHENY.

3. **Lilium superbum** L. TURK'S-CAP LILY. (Man. p. 265; I. F. f. 1008.) In meadows and marshes, Me. to Minn., N. C. and Tenn.—

Pennsylvania : NORTHAMPTON ; LANCASTER ; BRADFORD ; DELAWARE ; BLAIR ; BUCKS ; ALLEGHENY ; MARION ; BEDFORD ; MONTGOMERY ; ERIE ; CHESTER.

3. TULIPA L.

1. *Tulipa sylvestris* L. WILD TULIP. (Man. p. 1046.) In meadows, eastern Pa. Introduced from Eu.—*Pennsylvania* : BUCKS.

4. ERYTHRONIUM L.

Perianth white, pink or purplish within : styles united to above the middle, topped by 3 spreading stigmas. 1. *E. albidum*.

Perianth yellow within : styles wholly united : stigma terminal.

2. *E. Americanum*.

1. *Erythronium albidum* Nutt. WHITE ADDER'S TONGUE. (Man. p. 266 ; I. F. f. 1013.) In moist woods and thickets, Ont. to Minn., Ga. and Tex.—*Pennsylvania* : ALLEGHENY ; DAUPHIN ; LANCASTER ; UNION.

2. *Erythronium Americanum* Ker. YELLOW ADDER'S TONGUE. (Man. p. 266 ; I. F. f. 1012.) In moist woods and thickets, N. S. to Ont., Minn., Fla., Mo. and Ark.—*Pennsylvania* : NORTHAMPTON ; DELAWARE ; HUNTINGDON ; LANCASTER ; CHESTER.

5. QUAMASIA Raf.

1. *Quamasia hyacinthina* (Raf.) Britton. WILD HYACINTH. (Man. p. 267 ; I. F. f. 1018.) In meadows and along streams, Pa. to Minn., Ala. and Tex.—*Pennsylvania* : ALLEGHENY.

6. ORNITHOGALUM L.

Flowers in corymbs, erect.

1. *O. umbellatum*.

Flowers in racemes, drooping.

2. *O. nutans*.

1. *Ornithogalum umbellatum* L. STAR-OF-BETHLEHEM. (Man. p. 268 ; I. F. f. 1019.) In fields, Mass. to Va.—*Pennsylvania* : NORTHAMPTON ; PHILADELPHIA ; LANCASTER ; FRANKLIN ; CHESTER ; DELAWARE ; ALLEGHENY.

2. *Ornithogalum nutans* L. DROOPING STAR-OF-BETHLEHEM. (Man. p. 268 ; I. F. f. 1020.) Escaped in the eastern States. Native of Eu.—*Pennsylvania* : PHILADELPHIA ; LANCASTER ; ERIE.

7. MUSCARI Mill.

Perianth 2-3 mm. long, globular : leaves erect.

1. *M. botryoides*.

Perianth 4-6 mm. long, urn-shaped : leaves recurving.

2. *M. racemosum*.

1. *Muscari botryoides* (L.) Mill. GRAPE-HYACINTH. (Man. p. 268 ; I. F. f. 1021.) In meadows, thickets and along roadsides, Mass. to Ohio and Va. Nat. from Eu. Native also of Asia.—*Pennsylvania* : NORTHAMPTON ; PHILADELPHIA ; DELAWARE ; LANCASTER.

2. *Muscari racemosum* (L.) Mill. STARCH GRAPE-HYACINTH. (Man. p. 268 ; I. F. f. 1022.) Escaped, N. Y. to Md. Native of Eu.—*Pennsylvania* : LANCASTER.

8. **HEMEROCALLIS** L.

1. *Hemerocallis fulva* L. DAY LILY. (Man. p. 261; I. F. f. 990.) In meadows and along streams, N. B. and Ont. to Va. and Tenn. Native of Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; LANCASTER; PHILADELPHIA; CHESTER; MONROE; DELAWARE; ALLEGHENY.

9. **YUCCA** L.

1. *Yucca filamentosa* L. ADAM'S NEEDLE. (Man. p. 269; I. F. f. 1027.) In sandy soil, Md. to Fla., Tenn. and La.—*Pennsylvania*: LANCASTER, Mt. Joy.

FAM. 4. **CONVALLARIACEAE** Link. LILY-OF-THE-VALLEY FAMILY.

Leaves reduced to scales: branchlets very numerous, filiform.

1. ASPARAGUS.

Leaves normal: stems or scapes simple or sparingly branched.

Sepals and petals distinct.

Plants scapose: leaves basal.

2. CLINTONIA.

Plants caulescent: leaves cauline.

Flowers in terminal racemes or panicles.

Sepals and petals 3 each: stamens 6.

3. VAGNERA.

Sepals and petals 2 each: stamens 4.

4. UNIFOLIUM.

Flowers axillary or opposite the leaves, solitary, or a few in the clusters.

Fruit a berry: filaments mostly longer than the anthers.

Flowers axillary: filaments dilated: anthers acute.

5. STREPTOPUS.

Flowers terminal: filaments slender: anthers obtuse.

6. DISPORUM.

Fruit a capsule: filaments mostly shorter than the anthers.

7. UVULARIA.

Sepals and petals partly united into a tube.

Flowers axillary: perianth tubular: anthers sagittate.

8. SALOMONIA.

Flowers in terminal racemes: perianth campanulate: anthers oblong.

9. CONVALLARIA.

1. **ASPARAGUS** L.

1. *Asparagus officinalis* L. ASPARAGUS. (Man. p. 270; I. F. f. 1021.) Escaped, especially along salt marshes, N. B. to Va. Native of Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; PHILADELPHIA; FRANKLIN; CHESTER; DELAWARE; LUZERNE; ALLEGHENY.

2. **CLINTONIA** Raf.

Perianth greenish yellow: sepals and petals over 1 cm. long: flowers nodding: berries blue.

1. *C. borealis*.

Perianth white: sepals and petals less than 1 cm. long: flowers erect: berries black.

2. *C. umbellulata*.

1. *Clintonia borealis* (Ait.) Raf. YELLOW CLINTONIA. (Man. p. 270; I. F. f. 1029.) In moist woods, Newf. to Minn. and N. C.—*Pennsylvania*: MONROE; CENTRE; TIOGA; SCHUYLKILL; ERIE; SOMERSET; LACKAWANNA; PIKE.

2. *Clintonia umbellulata* (Michx.) Torr. WHITE CLINTONIA. (Man. p. 271; I. F. f. 1030.) In woods, N. Y. and N. J. to Ga. and

Tenn.—*Pennsylvania* FRANKLIN; HUNTINGDON; BLAIR; ARMSTRONG; ALLEGHENY; MERCER; SOMERSET.

3. VAGNERA Adans.

Inflorescence paniculate: flowers numerous.

1. *V. racemosa*.

Inflorescence racemose: flowers few—several.

Leaves several to many: berries striped.

2. *V. stellata*.

Leaves 2-4: berries red.

3. *V. trifolia*.

1. *Vagnera racemosa* (L.) Morong. WILD SPIKENARD. (Man. p. 271; I. F. f. 1031.) In moist woods and thickets, N. S. to B. C., Ga.; Mo. and Ariz.—*Pennsylvania*: MONROE; LACKAWANNA; CHESTER; NORTHAMPTON; DELAWARE; FRANKLIN; ERIE; PIKE; ALLEGHENY.

2. *Vagnera stellata* (L.) Morong. STAR-FLOWERED SOLOMON'S SEAL. (Man. p. 271; I. F. f. 1032.) In moist soil, Newf. to B. C., Va., Ky., Kans. and Cal.—*Pennsylvania*: NORTHAMPTON; MONROE; LANCASTER; HUNTINGDON; ERIE; ALLEGHENY; CENTRE; CHESTER.

3. *Vagnera trifolia* (L.) Morong. THREE-LEAVED SOLOMON'S SEAL. (Man. p. 271; I. F. f. 1033.) In bogs and wet woods, Newf. to B. C., Conn., Pa. and Mich.—*Pennsylvania*: MONROE; PIKE; ERIE.

4. UNIFOLIUM Adans.

1. *Unifolium Canadense* (Desf.) Greene. FALSE LILY-OF-THE-VALLEY. TWO-LEAVED SOLOMON'S SEAL. (Man. p. 271; I. F. f. 1034.) In moist woods, Newf. to the N. W. Terr., N. C., Iowa and S. Dak.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; ERIE; SOMERSET; YORK; BERKS; ALLEGHENY; MIFFLIN; DELAWARE; CHESTER; PIKE; LACKAWANNA.

5. STREPTOPUS Michx.

Leaf-blades green, sessile: perianth rose or purple: anthers 2-pointed.

1. *S. roseus*.

Leaf-blades glaucous beneath, clasping: perianth greenish white: anthers 1-pointed.

2. *S. amplexifolius*.

1. *Streptopus roseus* Michx. SESSILE-LEAVED TWISTED-STALK. (Man. p. 272; I. F. f. 1038.) In moist woods, Lab. to Alaska, Ga., Mich. and Ore.—*Pennsylvania*: MONROE, SUSQUEHANNA; SULLIVAN; TIOGA; BLAIR; SOMERSET; PIKE, Bushkill Falls; ERIE.

2. *Streptopus amplexifolius* (L.) DC. CLASPING-LEAVED TWISTED-STALK. (Man. p. 272; I. F. f. 1037.) In moist woods, Lab. to Alaska, N. C., Ohio, Mich. and N. Mex.—*Pennsylvania*: WAYNE; SULLIVAN; CARBON, Onoko Glen; BLAIR; ERIE; PIKE.

6. DISPORUM Salisb.

1. *Disporum lanuginosum* (Michx.) Nichols. HAIRY DISPORUM. (Man. p. 272; I. F. f. 1035.) In woods, Ont. to N. Y., Ga. and Tenn.—*Pennsylvania*: HUNTINGDON, Birmingham; BLAIR; CRAWFORD, Hammarley; ERIE; SOMERSET; FAYETTE; CAMBRIA.

7. *UVULARIA* L.

Sepals and petals each with 2 ridges on either side of a deep nectary: capsule obovoid or turbinate, 3-lobed.

Sepals and petals papillose within.

1. *U. perfoliata*.

Sepals and petals smooth within.

2. *U. grandiflora*.

Sepals and petals without ridges or nectary: capsules elliptic or oval, 3-winged.

3. *U. sessilifolia*.

1. *Uvularia perfoliata* L. PERFOLIATE BELLWORT. (Man. p. 260; I. F. f. 986.) In moist woods, Quebec and Ont. to Fla. and Miss.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; COLUMBIA; DELAWARE; CHESTER; ALLEGHENY.

2. *Uvularia grandiflora* J. E. Smith. LARGE-FLOWERED BELLWORT. (Man. p. 260; I. F. f. 987.) In rich woods, Quebec to Minn., Ga., Tenn. and Iowa.—*Pennsylvania*: SUSQUEHANNA; CLEARFIELD; MERCER; ALLEGHENY; FAYETTE; ERIE.

3. *Uvularia sessilifolia* L. SESSILE-LEAVED BELLWORT. (Man. p. 260; I. F. f. 988.) In moist woods and thickets, N. B. to Minn., Ga. and Ark.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER; LEBANON; FRANKLIN; HUNTINGDON; MERCER; CHESTER; ERIE; DELAWARE; SUSQUEHANNA; FAYETTE; ALLEGHENY.

8. *SALOMONIA* Heist.

Leaf-blades pubescent beneath: filaments rough, adnate to the perianth for about $\frac{3}{4}$ its length.

1. *S. biflora*.

Leaf-blades glabrous: filaments smooth, adnate to the perianth for about $\frac{1}{2}$ its length.

2. *S. commutata*.

1. *Salomonía biflora* (Walt.) Britton. HAIRY SOLOMON'S SEAL. (Man. p. 273; I. F. f. 1039.) In woods and thickets, N. B. to Mich. and Fla.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; ERIE; PIKE; DELAWARE.

2. *Salomonía commutata* (R. & S.) Britton. SMOOTH SOLOMON'S SEAL. (Man. p. 273; I. F. f. 1040.) In moist woods and along streams, R. I. to Man., Ga., La., Utah and N. Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; FRANKLIN; MONROE; LANCASTER; CHESTER; DELAWARE; ALLEGHENY.

9. *CONVALLARIA* L.

1. *Convallaria majalis* L. LILY-OF-THE-VALLEY. (Man. p. 273; I. F. f. 1041.) On the higher mountains of Va., N. C. and S. C.—*Pennsylvania*: PHILADELPHIA, escaped.

FAMILY 5. TRILLIACEAE Lindl. TRILLIUM FAMILY.

Flowers several in umbel-like clusters: sepals and petals nearly alike: flowering stems with a whorl of leaves and a whorl of bracts.

1. MEDEOLA.

Flowers solitary: sepals and petals very different: flowering stems (scapes) with only a whorl of leaf-like bracts.

2. TRILLIUM.

1. MEDEOLA L.

1. *Medeola Virginica* L. INDIAN CUCUMBER-ROOT. (Man. p. 274; I. F. f. 1042.) In moist woods and thickets, N. S. to Minn., Fla. and Tenn.

—*Pennsylvania*: MONROE; NORTHAMPTON; CHESTER; LANCASTER; HUNTINGDON; ERIE; SOMERSET; PIKE; YORK; DELAWARE; ALLEGHENY.

2. TRILLIUM L.

Flower sessile.

1. *T. sessile*.

Flower pedicelled.

Bracts not narrowed into petiole-like bases.

Peduncles erect, or rarely declined, then several times longer than the sepals.

Petals lanceolate, slightly longer than the sepals. 2. *T. erectum*.

Petals oblanceolate or obovate-oblanceolate, much longer than the sepals.

3. *T. grandiflorum*.

Pedicels recurved or declined, shorter than the sepals or only slightly longer.

4. *T. cernuum*.

Bracts narrowed into petiole-like bases.

Blades of the bracts acuminate at the apex: petals veiny, over 2.5 cm. long.

5. *T. undulatum*.

Blades of the bracts obtuse at the apex: petals not veiny, less than 2.5 cm. long.

6. *T. nivale*.

1. *Trillium sessile* L. SESSILE-FLOWERED WAKE-ROBIN. (Man. p. 274; I. F. f. 1043.) In moist woods and thickets, Pa. to Minn., Fla., Miss. and Ark.—*Pennsylvania*: ALLEGHENY; WASHINGTON; ERIE.

2. *Trillium erectum* L. ILL-SCENTED WAKE-ROBIN. (Man. p. 275; I. F. f. 1047.) In woods, N. S. to James' Bay and Man., N. C., Tenn. and Mo.—*Pennsylvania*: MONROE; BUCKS; LANCASTER; YORK; SULLIVAN; VENANGO; BLAIR; HUNTINGDON; CLINTON; ERIE; SOMERSET; ALLEGHENY.

3. *Trillium grandiflorum* (Michx.) Salisb. LARGE-FLOWERED WAKE-ROBIN. (Man. p. 275; I. F. f. 1046.) In woods, Quebec to Minn., Fla. and Mo.—*Pennsylvania*: LANCASTER; SUSQUEHANNA; ELK; VENANGO; ALLEGHENY; ERIE.

4. *Trillium cernuum* L. NODDING WAKE-ROBIN. (Man. p. 275; I. F. f. 1048.) In rich woods, N. S. to Minn., Ga. and Mo.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; LANCASTER; DELAWARE; MONTGOMERY.

5. *Trillium undulatum* Willd. PAINTED WAKE-ROBIN. (Man. p. 275; I. F. f. 1049.) In woods, N. S. to Wis., Ga. and Mo.—*Pennsylvania*: MONROE; CARBON; SCHUYLKILL; CENTRE; HUNTINGDON; BLAIR; CAMBRIA; ERIE; SOMERSET; LACKAWANNA.

6. *Trillium nivale* Ridd. EARLY WAKE-ROBIN. (Man. p. 274; I. F. f. 1045.) In woods and thickets, Pa. to Minn., Ky. and Iowa.—*Pennsylvania*: WESTMORELAND; ALLEGHENY.

FAMILY 6. SMILACACEAE Vent. SMILAX FAMILY.

1. SMILAX L.

A. Stems herbaceous, annual, unarmed: ovules 2 in each cavity.

Peduncles becoming much longer than the subtending bracts: leaf-blades prominently 7-9-nerved.

1. *S. herbacea*.

- Peduncles shorter than the subtending bracts or slightly longer: leaf-blades prominently 5-nerved. 2. *S. tamnifolia*.
- B. Stems woody, perennial, prickly: ovules solitary in each cavity.
- Peduncles of pistillate plants much longer than the petioles.
- Leaf-blades glaucous beneath. 3. *S. glauca*.
- Leaf-blades green on both sides.
- Peduncles of pistillate plants fully twice or four times as long as the petioles during anthesis.
- Peduncles about twice as long as the petioles in fruit: spines on lower part of stem numerous, bristle-like. 4. *S. hispida*.
- Peduncles 3-4 times as long as the petioles in fruit: spines few, stout and rigid or wanting. 5. *S. Pseudo-China*.
- Peduncles of pistillate plants barely twice as long as the petioles. 6. *S. Bona-nox*.
- Peduncles of pistillate plants shorter than the petioles or barely surpassing them. 7. *S. rotundifolia*.

1. *Smilax herbacea* L. CARRION-FLOWER. (Man. p. 276; I. F. f. 1050.) In woods and thickets, N. B. to N. Dak., Fla., La. and Neb.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; FRANKLIN; HUNTINGDON; CHESTER; DELAWARE; ALLEGHENY.

2. *Smilax tamnifolia* Michx. HALBERD-LEAVED SMILAX. (Man. p. 276; I. F. f. 1051.) In dry soil, N. J. and Pa. to S. C. and Tenn.—*Pennsylvania*: DELAWARE, Tinicum.

3. *Smilax glauca* Walt. GLAUCCUS-LEAVED GREENBRIER. (Man. p. 276; I. F. f. 1053.) In dry sandy soil, Mass. to Kans., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; DELAWARE, Tinicum; MONTGOMERY; SCHUYLKILL; ALLEGHENY.

4. *Smilax hispida* Muhl. HISPID GREENBRIER. (Man. p. 277; I. F. f. 1055.) In thickets, Ont. to Minn., Neb., Va. and Tex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY; SOMERSET; FULTON.

5. *Smilax Pseudo-China* L. LONG-STALKED GREENBRIER. (Man. p. 277; I. F. f. 1056.) In dry thickets, Pa. to Neb., Fla. and Tex.—*Pennsylvania*: ALLEGHENY; CLEARFIELD; HUNTINGDON; FRANKLIN.

6. *Smilax Bona-nox* L. BRISTLY GREENBRIER. (Man. p. 277; I. F. f. 1057.) In thickets, Mass. to Kans., Fla. and Tex.—*Pennsylvania*: DELAWARE.

7. *Smilax rotundifolia* L. GREENBRIER. CATBRIER. (Man. p. 277; I. F. f. 1054.) In woods and thickets, Ont. to Minn., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER; CHESTER; LACKAWANNA; SOMERSET; FRANKLIN; SCHUYLKILL; DELAWARE; ALLEGHENY.

Order 9. AMARYLLIDALES.

Stamens 6.

Upright herbs: flowers perfect.

Twining vines: flowers dioecious.

Stamens 3.

Fam. 1. AMARYLLIDACEAE.

Fam. 2. DIOSCOREACEAE.

Fam. 3. IRIDACEAE.

FAMILY I. **AMARYLLIDACEAE** Lindl. AMARYLLIS FAMILY.

Perennial from corms or short rootstocks.

Ovary and capsules one-half inferior.

Ovary and capsules wholly inferior.

Perennial from coated bulbs.

1. ALETRIS.

2. HYPOXIS.

3. NARCISSUS.

1. **ALETRIS** L.

1. *Aletris farinosa* L. STAR-GRASS. COLIC-ROOT. (Man. p. 269; I. F. f. 1023.) In dry soil, Me. to Minn., Fla. and Tenn.—*Pennsylvania*: MONTGOMERY; CHESTER; LANCASTER; LUZERNE; CLINTON.

2. **HYPOXIS** L.

1. *Hypoxis hirsuta* (L.) Coville. STAR-GRASS. (Man. p. 280; I. F. f. 1066.) In dry soil, Me. to Assiniboia, Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; CHESTER; LANCASTER; BUCKS; COLUMBIA; HUNTINGDON; FRANKLIN; MONROE; MONTGOMERY; DELAWARE; ALLEGHENY.

3. **NARCISSUS** L.

1. *Narcissus Pseudo-Narcissus* L. DAFFODIL. (Man. p. 279.) Escaped, Pa. and N. J.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER.

FAMILY 2. **DIOSCOREACEAE** Lindl. YAM FAMILY.1. **DIOSCOREA** L.

1. *Dioscorea villosa* L. WILD YAM-ROOT. (Man. p. 281; I. F. f. 1068.) In moist thickets, R. I. to Ont. to Minn., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; LEBANON; LANCASTER; LUZERNE; COLUMBIA; LACKAWANNA; FULTON; FRANKLIN; DELAWARE; ALLEGHENY.

FAMILY 3. **IRIDACEAE** Lindl. IRIS FAMILY.

Styles alternate with the stamens.

Filaments distinct: seeds drupe-like.

Filaments united: seeds dry.

Styles opposite or arching over the stamens.

1. GEMMINGIA.

2. SISYRINCHIUM.

3. IRIS.

1. **GEMMINGIA** Fabr.

1. *Gemmingia Chinensis* (L.) Kuntze. BLACKBERRY LILY. (Man. p. 284; I. F. f. 1082.) On hills and along roadsides, N. Y. to Ga., Ind. and Mo. Nat. from Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; YORK; DELAWARE; ALLEGHENY.

2. **SISYRINCHIUM** L.

Scapes simple and terminated by the sessile or nearly sessile spathe or spathes.

Capsules 2-4 mm. long: leaf-blades mostly less than 1.5 mm. wide.

1. *S. mucronatum*.

Capsules 4-6 mm. long: leaf-blades mostly over 1.5 mm. wide.

2. *S. angustifolium*.

Scapes branched or bearing two or more terminal peduncles.

Foliage becoming dark in drying: broadly winged scapes over 1.5 mm. wide.

3. *S. graminoides*.

Foliage green in drying: narrowly winged scapes less than 1.5 mm. wide.

4. *S. Atlanticum*.

1. *Sisyrinchium mucronatum* Michx. MICHAUX'S BLUE-EYED GRASS. (Man. p. 286.) In meadows and fields, Mich. to N. J. and Va.—*Pennsylvania*: MONROE; PIKE.

2. *Sisyrinchium angustifolium* Mill. POINTED BLUE EYED GRASS. (Man. p. 286; I. F. f. 1085.) In fields, Newf. to B. C., Va., Kans. and Colo.—*Pennsylvania*: MONROE; NORTHAMPTON; DELAWARE; FRANKLIN; LANCASTER; ERIE; CHESTER; ALLEGHENY.

3. *Sisyrinchium graminoides* Bicknell. STOUT BLUE-EYED GRASS. (Man. p. 287; I. F. f. 1083.) In grassy places, sometimes in woods, Mass. to Fla. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; ARMSTRONG; LANCASTER; PIKE; MONTGOMERY; CHESTER; DELAWARE; ALLEGHENY.

4. *Sisyrinchium Atlanticum* Bicknell. EASTERN BLUE-EYED GRASS. (Man. p. 287; I. F. f. 1084.) In moist fields and brackish marshes, Newf. to Fla., mostly near the coast.—*Pennsylvania*: BUCKS, Penn Valley.

3. IRIS L.

Plants usually over 3 dm. tall: outer perianth-lobes larger than the inner.

Leaf-blades over 1 cm. wide.

1. *I. versicolor*.

Leaf-blades less than 1 cm. wide.

2. *I. prismatica*.

Plants usually less than 1 dm. tall: outer and inner perianth-lobes nearly equal.

3. *I. verna*.

1. *Iris versicolor* L. LARGER BLUE-FLAG. (Man. p. 282; I. F. f. 1069.) In marshes and wet meadows, Newf. to Man., Fla. and Ark.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER; HUNTINGDON; PERRY; ERIE; CHESTER; ALLEGHENY.

2. *Iris prismatica* Pursh. SLENDER BLUE-FLAG. (Man. p. 283; I. F. f. 1074.) In wet grounds, N. B. to Pa. and N. C., mainly near the coast.—*Pennsylvania*: LANCASTER, New Texas; DELAWARE; CHESTER.

3. *Iris verna* L. DWARF IRIS. (Man. p. 284; I. F. f. 1080.) On shaded hillsides and in woods, Pa. to Ga. and Ky.—*Pennsylvania*: LANCASTER, Wakefield.

Order 10. ORCHIDALES.

FAMILY I. ORCHIDACEAE Lindl. ORCHID FAMILY.

Anthers 2: lip a large inflated sac.

1. CYPRIPEDIUM.

Anther solitary: lip various.

A. Anther adnate to the column, erect, persistent.

a. Lip with a tubular spur at the base: anther adnate to the apex of the column; sacs separate.

Glands of the stigma enclosed in a pouch.

2. GALEORCHIS.

Glands of the stigma not enclosed in a pouch.

* Lip or its lobes neither lacinate nor fringed.

Anther-sacs mostly parallel: stems not scape-like.

Valves of the anthers dilated at the base, enclosing the glands below.

3. PERULARIA.

Valves of the anthers not dilated at the base.

Glands of the stigmas surrounded by a thin membrane.

4. COELOGLOSSUM.

Glands of the stigmas naked.

Beak of the stigma with 2 or 3 appendages.

5. *GYMNADENIOPSIS*.

Beak of the stigma not appendaged.

6. *LIMNORCHIS*.

Anther sacs divergent : stems scape-like.

7. *LYSIAS*.

** Lip or its lobes fringed or lacinate.

8. *BLEPHARIGLOTTIS*.

b. Lip spurless, or if with a spur, this merely sac-like : anther adnate to the back of the column : sacs approximate.

Lip flat, at least not saccate.

Stems with alternate leaves, these often scale-like : lip neither cleft nor parted.

9. *GYROSTACHYS*.

Stems with opposite leaves : lip 2-cleft or 2-parted.

10. *LISTERA*.

Lip sac-like.

11. *PERAMIUM*.

B. Anther attached to the apex of the column like a lid, deciduous.

Pollen in loose powdery masses.

Scapose plants : leaves basal or wanting.

Leaves basal, sheathing the scape : bracts alternate : column winged at the apex.

12. *LIMODORUM*.

Leaves wanting or mere basal scales : bracts whorled at the top of the scape.

13. *ISOTRIA*.

Cauliscent plants.

Column club-shaped or very short, wingless : pollen masses 2 or 2-parted.

Flowers normally solitary, terminal : lip crested.

14. *POGONIA*.

Flowers axillary, in few-flowered racemes : lip not crested.

15. *TRIPHORA*.

Column dilated above, petal-like : pollen masses 4.

16. *ARETHUSA*.

Pollen in waxy masses.

Pollen masses without either elastic connecting tissue or stalks.

Stems bearing normal leaves.

Leaf sheathing the scape to near the middle : column minute, 2-toothed at the apex.

17. *ACHROANTHES*.

Leaves barely, sheathing the scapes : column elongated, incurved, margined above.

18. *LEPTORCHIS*.

Stems bearing clasping or sheathing scales.

Rootstocks coral-like : lips with a short spur adnate to the ovary, proper leaves none.

19. *CORALLORHIZA*.

Rootstock corm-like : lip spurless : proper leaf solitary, absent during anthesis.

20. *APLECTRUM*.

Pollen masses with connecting tissue and stalks.

21. *TIPULARIA*.

1. *CYPRIPEDIUM* L.

Scapose : leaves 2, basal : lip with a fissure down the front : sterile stamen glandular-pubescent : stigma broadest at the apex.

1. *C. acaule*.

Cauliscent : leaves several : lip with a rounded opening : sterile stamens glabrous : stigma broadest at the base.

Lip longer than the sepals and the lateral petals.

2. *C. reginae*.

Lip shorter than the sepals and lateral petals or about as long.

Sterile stamen lanceolate : lip white.

3. *C. candidum*.

Sterile stamen triangular : lip yellow.

Lip bright yellow, 1.5-3 cm. long : stigma acute.

4. *C. parviflorum*.

Lip pale yellow, 3.5-5 cm. long : stigma obtuse.

5. *C. hirsutum*.

1. *Cypripedium acaule* Ait. MOCCASIN FLOWER. [STEMLESS LADIES' SLIPPER. (Man. p. 291; I. F. f. 1089.) In sandy or rocky woods, Newf. to Ont., N. C., Ky. and Mo.—*Pennsylvania*: SCHUYLKILL; MONROE; LANCASTER; COLUMBIA; ERIE; MONTGOMERY; BERKS; SOMERSET; FRANKLIN; HUNTINGDON; CHESTER; DELAWARE; VENANGO; ALLEGHENY.

2. *Cypripedium reginae* Walt. SHOWY LADIES' SLIPPER. (Man. p. 29; I. F. f. 1090.) In swamps and woods, N. S. to Minn. and Ga.—*Pennsylvania*: HUNTINGDON; CLEARFIELD; ERIE; LUZERNE.

3. *Cypripedium candidum* Willd. SMALL WHITE LADIES' SLIPPER. (Man. p. 291; I. F. f. 1091.) In bogs and meadows, N. Y. and N. J. to Minn. and Mo.—*Pennsylvania*: LANCASTER.

4. *Cypripedium parviflorum* Salisb. SMALL YELLOW LADIES' SLIPPER. (Man. p. 291; I. F. f. 1093.) In rich woods and thickets, Newf. to Wash., and along the mountains to Ga. and to Mo.—*Pennsylvania*: NORTHAMPTON; LEHIGH; MONROE; LANCASTER; HUNTINGDON; ELK; LUZERNE; VENANGO.

5. *Cypripedium birsutum* Mill. LARGE YELLOW LADIES' SLIPPER. (Man. p. 291; I. F. f. 1092.) In woods and thickets, N. S. to Minn., Ala. and Neb.—*Pennsylvania*: NORTHAMPTON; MONROE; BUCKS; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; BLAIR; ERIE; CAMBRIA; CHESTER; VENANGO; ALLEGHENY.

2. GALEORCHIS Rydb.

1. *Galeorchis spectabilis* (L.) Rydb. SHOWY ORCHIS. (Man. p. 292; I. F. f. 1094.) In rich woods, N. B. to Minn., Ga. and Neb.—*Pennsylvania*: NORTHAMPTON; MONROE; LANCASTER; YORK; FRANKLIN; HUNTINGDON; ERIE; CHESTER; DELAWARE; ALLEGHENY.

3. PERULARIA Lindl.

1. *Perularia flava* (L.) Rydb. SMALL PALE-GREEN ORCHIS. (Man. p. 292; I. F. f. 1105.) In moist soil, Ont. to Minn., Fla. La. and Mo.—*Pennsylvania*: MONROE; BUCKS; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; CHESTER; DELAWARE; ERIE.

4. COELOGLOSSUM Hartman.

1. *Coeloglossum bracteatum* (Willd.) Parl. LONG-BRACTED ORCHIS. (Man. p. 292; I. F. f. 1103.) In woods and meadows, N. B. to B. C., N. C. and Neb. Also in Eu.—*Pennsylvania*: NORTHAMPTON; MONROE; HUNTINGDON; BLAIR; PIKE; LANCASTER; FRANKLIN; SUSQUEHANNA.

5. GYMNADENIOPSIS Rydb.

1. *Gymnadeniopsis clavellata* (Michx.) Rydb. SMALL GREEN WOOD ORCHIS. (Man. p. 293; I. F. f. 1104.) In wet or moist woods, Newf. to Minn., Fla. and La.—*Pennsylvania*: WAYNE; MONROE; LANCASTER; HUNTINGDON; BLAIR; ERIE; SOMERSET; MONTGOMERY; LEBANON; CENTRE; LACKAWANNA; CHESTER; DELAWARE; ERIE.

6. **LIMNORCHIS** Rydb.

Perianth greenish or greenish yellow: lip lanceolate, scarcely, if at all dilated at the base.

1. *L. hypoborea*.

Perianth white: lip manifestly rhomboid-dilated at the base.

2. *L. dilatata*.

1. ***Limnorchis hypoborea*** (L.) Rydb. TALL LEAFY GREEN ORCHIS; (Man. p. 294; I. F. f. 1100.) In bogs and wet woods, N. S. to Alaska, N. J., Colo. and Oregon.—*Pennsylvania*: WAYNE, Mt. Pleasant; ERIE, Union City; SUSQUEHANNA.

2. ***Limnorchis dilatata*** (Pursh) Rydb. TALL WHITE BOG ORCHIS. (Man. p. 294; I. F. f. 1101.) In bogs and wet woods, N. S. to Alaska, Me., N. Y., Utah and Ore.—*Pennsylvania*: ERIE, Union City.

7. **LYSIAS** Salisb.

Perianth greenish white: spur twice as long as the ovary. 1. *L. orbiculata*.

Perianth yellowish green: spur about as long as the ovary. 2. *L. Hookeriana*.

1. ***Lysias orbiculata*** (Pursh) Rydb. LARGE ROUND-LEAVED ORCHIS. (Man. p. 294; I. F. f. 1096.) In rich woods, Newf. to B. C., N. C. and Minn.—*Pennsylvania*: MONROE; CARBON; CENTRE; HUNTINGDON; BLAIR; ERIE; SOMERSET; CHESTER; SUSQUEHANNA; ALLEGHENY.

2. ***Lysias Hookeriana*** (A. Gray) Rydb. HOOKER'S ORCHIS. (Man. p. 295; I. F. f. 1097.) In woods, N. S. to Minn., N. J., Pa. and Iowa.—*Pennsylvania*: MONROE, Water Gap; TIOGA; BLAIR; ERIE.

8. **BLEPHARIGLOTTIS** Raf.

Lip fringed.

Spur about $\frac{1}{2}$ as long as the ovary.

1. *B. cristata*.

Spur as long as the ovary or much longer.

Perianth white.

2. *B. Blephariglottis*.

Perianth yellow or orange-yellow.

3. *B. ciliaris*.

Lip 3-lobed or 3-parted: segments entire, incised or fringed.

Segments of lip incised or erose.

4. *B. peramoena*.

Segments of lip fringed.

Body of segments 1 mm. broad or narrower, slightly broadened.

5. *B. lacera*.

Body of segments fan-shaped.

Lip 1-1.5 cm. broad.

6. *B. psychodes*.

Lip 2-2.5 cm. broad.

7. *B. grandiflora*.

1. ***Blephariglottis cristata*** (Michx.) Raf. CRESTED YELLOW ORCHIS. (Man. p. 295; I. F. f. 1106.) In bogs, N. J. to Fla. and La.—*Pennsylvania*: MONTGOMERY, bog near Willow Grove.

2. ***Blephariglottis Blephariglottis*** (Willd.) Rydb. WHITE FRINGED ORCHIS. (Man. p. 296; I. F. f. 1108.) In bogs and swamps, Newf. to Minn. and N. J.—*Pennsylvania*: MONROE; WAYNE; TIOGA.

3. ***Blephariglottis ciliaris*** (L.) Rydb. YELLOW FRINGED ORCHIS. (Man. p. 296; I. F. f. 1107.) In meadows, Vt. (?) and Ont. to Mich., Fla. and Tex.—*Pennsylvania*: MONROE; CENTRE; SCHUYLKILL; FUL-

TON ; HUNTINGDON ; LACKAWANNA ; LANCASTER ; LEBANON ; CHESTER ; NORTHAMPTON.

4. *Blephariglottis peramoena* (A. Gray) Rydb. FRINGELESS PURPLE ORCHIS. (Man. p. 297 ; I. F. f. 1113.) In moist meadows, N. J. to Ill., Va. and Ky.—*Pennsylvania* : DELAWARE ; LANCASTER, New Texas ; CAMBRIA, Johnstown ; SOMERSET ; ALLEGHENY.

5. *Blephariglottis lacera* (Michx.) Rydb. RAGGED ORCHIS. (Man. p. 296 ; I. F. f. 1109.) In swamps and wet woods, N. S. to Minn., Ga. and Mo.—*Pennsylvania* : MONROE ; DELAWARE ; LANCASTER ; BUCKS ; CHESTER ; LEBANON ; LUZERNE ; BLAIR ; ALLEGHENY ; ARMSTRONG ; MONTGOMERY ; FULTON ; CENTRE.

6. *Blephariglottis psycodes* (L.) Rydb. SMALLER PURPLE-FRINGED ORCHIS. (Man. p. 296 ; I. F. f. 1112.) In meadows and swamps, Newf. to Minn., N. C. and Ind.—*Pennsylvania* : MONROE ; LUZERNE ; HUNTINGDON ; BLAIR ; VENANGO ; ARMSTRONG ; FRANKLIN ; LANCASTER ; CHESTER ; DELAWARE.

7. *Blephariglottis grandiflora* (Bigel.) Rydb. LARGE PURPLE-FRINGED ORCHIS. (Man. p. 296 ; I. F. f. 1111.) In rich woods and meadows, N. B. to Mich. and N. C. *Pennsylvania* : NORTHAMPTON ; LUZERNE ; HUNTINGDON ; BLAIR ; VENANGO ; ARMSTRONG ; FRANKLIN ; LANCASTER ; CHESTER ; DELAWARE ; SUSQUEHANNA.

9. GYROSTACHYS Pers.

Flowers alternate, forming a one-sided spike by the twisting of the rachis.

Leaves with blades at the base of the stem, fugacious ; blades oblong, elliptic or ovate.

Lips white : tuberous root solitary.

1. *G. simplex*.

Lips green in the middle : tuberous roots several.

2. *G. gracilis*.

Leaves with blades, extending some distance up the stem, persistent ; blades linear.

3. *G. praecox*.

Flowers 3-ranked, forming a cylindric spike : rachis barely twisted.

Lateral sepals free and separate.

Lip with a cuneate base and 2 stout reflexed callosities.

4. *G. cernua*.

Lip with a truncate base and 2 small spreading callosities.

5. *G. plantaginea*.

6. *G. stricta*.

Sepals and petals more or less converging into a hood.

1. *Gyrostachys simplex* (A. Gray) Kuntze. LITTLE LADIES' TRESSES. (Man. p. 300 ; I. F. f. 1126.) In dry sandy soil, Mass. to Md.—*Pennsylvania* : LANCASTER ; BUCKS.

2. *Gyrostachys gracilis* (Bigel.) Kuntze. SLENDER LADIES' TRESSES. (Man. p. 301 ; I. E. f. 1127.) In dry fields and open woods, N. S. to Minn., Fla., La. and Kans.—*Pennsylvania* : MONROE ; LUZERNE ; NORTHAMPTON ; CHESTER ; LANCASTER ; FRANKLIN ; HUNTINGDON ; MONTGOMERY ; LACKAWANNA ; YORK ; DELAWARE ; ALLEGHENY.

3. *Gyrostachys praecox* (Walt.) Kuntze. GRASS-LEAVED LADIES' TRESSES. (Min. p. 300 ; I. F. f. 1125.) In grassy places, N. Y. to Fla. and La.—*Pennsylvania* : LACKAWANNA, Moosic Lake ; MONROE ; LANCASTER.

4. *Gyrostachys cernua* (L.) Kuntze. NODDING LADIES' TRESSES. (Man. p. 300; I. F. f. 1123.) In wet meadows and swamps, N. S. to Minn., Fla. and La.—*Pennsylvania*: MONROE; LUZERNE; NORTHAMPTON; LANCASTER; YORK; FRANKLIN; HUNTINGDON; LEBANON; ARMSTRONG; ERIE, Presque Isle; MONTGOMERY; DELAWARE, Tincum; CHESTER; FAYETTE; ALLEGHENY.

5. *Gyrostachys plantaginea* (Raf.) Britton. WIDE-LEAVED LADIES' TRESSES. (Man. p. 300; I. F. f. 1122.) Moist banks and woods, N. B. to Minn., Va. and Mich.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN.

6. *Gyrostachys stricta* Rydb. HOODED LADIES' TRESSES. (Man. p. 299; I. F. f. 1121.) In bogs, Newf. to Idaho, Me., Pa., Minn. and Colo.—*Pennsylvania*: ERIE, Presque Isle; CRAWFORD, Hammarley.

10. *LISTERA* R. Br.

Column very short, 0.5 mm. long or less: lip linear or nearly so.

- | | |
|---|--------------------------|
| Lip with lateral teeth: rachis and pedicels glabrous. | 1. <i>L. cordata</i> . |
| Lip without lateral teeth: rachis and pedicels glandular. | 2. <i>L. australis</i> . |
| Column relatively long, 1.5 mm. long: lip wedge-shaped. | 3. <i>L. Smallii</i> . |

1. *Listera cordata* (L.) R. Br. HEART-LEAVED TWAYBLADE. (Man. p. 301; I. F. f. 1129.) In moist woods, N. S. to Alaska, N. J. and Oregon.—*Pennsylvania*: WAYNE, Mt. Pleasant; CENTRE.

2. *Listera australis* Lindl. SOUTHERN TWAYBLADE. (Man. p. 302; I. F. f. 1130.) In bogs, N. Y. and N. J. to Fla. and La.—*Pennsylvania*: CHESTER, N. Valley hills.

3. *Listera Smallei* Wiegand. SMALL'S TWAYBLADE. (Man. p. 301; I. F. f. 1128a.) In damp woods in the mts. from Pa. to N. C. and Tenn.—*Pennsylvania*: SOMERSET.

11. *PERAMIUM* Salisb.

Spike one-sided, somewhat spirally twisted: lip ending in an oblong recurved tip: stigma 2-toothed.

1. *P. ophioides*.

Spike cylindric: tip ending in ovate straight tip: stigma entire.

2. *P. pubescens*.

1. *Peramium ophioides* (Fernald) Rydb. WHITE-BLOTCHED RATTLESNAKE PLANTAIN. (Man. p. 302.) In cold, mossy woods, Prince Edward Island to Man. and N. C.—*Pennsylvania*: HUNTINGDON; CENTRE; BLAIR.

2. *Peramium pubescens* (Willd.) MacM. DOWNY RATTLESNAKE PLANTAIN. (Man. p. 302; I. F. f. 1132.) In dry woods, Newf. to Minn., Fla. and Tenn.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN, MONROE; LUZERNE; LEBANON; DELAWARE; CHESTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY; MONTGOMERY; CENTRE; YORK.

12. *LIMODORUM* L.

1. *Limodorum tuberosum* L. GRASS-PINK CALOPOGON. (Man. p. 298; I. F. f. 1145.) In bogs and meadows, Newf. to Minn., Fla. and

Mo.—*Pennsylvania*: MONROE; CARBON; SUSQUEHANNA; WAYNE; TIOGA; HUNTINGDON; NORTHAMPTON; DELAWARE; ERIE; MONTGOMERY; LANCASTER; LACKAWANNA; PIKE; CHESTER.

13. ISOTRIA Raf.

Lip crested along a narrow line above the face: pedicel as long as the capsule or longer.

1. *I. verticillata*.

Lip crested over the face and lobes: pedicel shorter than the capsule.

2. *I. affinis*.

1. *Isotria verticillata* (Willd.) Raf. WHORLED POGONIA. (Man. p. 297; I. F. f. 111.) In moist woods, Ont. to Wis., Ind. and Fla.—*Pennsylvania*: NORTHAMPTON; CHESTER; LANCASTER; LEBANON; SCHUYLKILL; HUNTINGDON; CENTRE; MONTGOMERY; SOMERSET; DELAWARE; ALLEGHENY.

2. *Isotria affinis* (Austin) Rydb. SMALLER WHORLED POGONIA. (Man. p. 297; I. F. f. 1118.) In moist woods, Conn., Pa. and N. J.—*Pennsylvania*: MONROE, Water Gap; BERKS; PHILADELPHIA.

14. POGONIA Juss.

1. *Pogonia ophioglossoides* (L.) Ker. ROSE POGONIA. (Man. p. 297; I. F. f. 1114.) In meadows and swamps, Newfoundland to Ont., Fla. and Kans. Also in Japan.—*Pennsylvania*: TIOGA; LUZERNE; MONROE; NORTHAMPTON; BUCKS; CHESTER; ERIE, Saunders; MONTGOMERY; LANCASTER; BERKS; LACKAWANNA; PIKE; DELAWARE.

15. TRIPHORA Nutt.

1. *Triphora trianthophora* (Sw.) Rydb. NODDING POGONIA. (Man. p. 298; I. F. f. 1115.) In rich woods, Ont. (?) to R. I. Fla., Wis. and Kans.—*Pennsylvania*: BUCKS; PHILADELPHIA; LEHIGH; LANCASTER; NORTHAMPTON; CHESTER; DELAWARE.

16. ARETHUSA L.

1. *Arethusa bulbosa* L. ARETHUSA. (Man. p. 298; I. F. f. 1119.) In bogs, Newfoundland to Minn., N. C. and Ind.—*Pennsylvania*: WAYNE; CHESTER; LANCASTER.

17. ACHROANTHES Raf.

Lip entire at the acute apex.

1. *A. monophylla*.

Lip 3-toothed at the broad apex.

2. *A. unifolia*.

1. *Achroanthos monophylla* (L.) Greene. WHITE ADDER'S-MOUTH. (Man. p. 303; I. F. f. 11134.) In woods, Quebec to Minn., Pa. and Neb.—*Pennsylvania*: WAYNE; CENTRE; SUSQUEHANNA.

2. *Achroanthos unifolia* (Michx.) Greene. GREEN ADDER'S-MOUTH. (Man. p. 303; I. F. f. 11135.) In woods and thickets, Newf. to Minn., Fla., Ala. and Mo.—*Pennsylvania*: WAYNE; MONROE; LACKAWANNA; PHILADELPHIA; LANCASTER; FRANKLIN; HUNTINGDON; ARMSTRONG; CENTRE; MIFFLIN; DELAWARE.

18. **LEPTORCHIS** Thouars.

Petals linear : lip 2.5-3.5 mm. broad : capsules oblong.

1. *L. Loeselii*.

Petals filiform or linear-filiform : lip 9-12 mm. broad : capsules clavate-oblong.

2. *L. liliifolia*.

1. **Leptorchis Loeselii** (L.) MacM. LOESEL'S TWAYBLADE. (Man. p. 303; I. F. f. 1137.) In wet thickets, N. S. to the N. W. Terr., Ala. and Mo.—*Pennsylvania* : MONROE; BERKS, near Reading; ERIE, Presque Isle; CHESTER; BUCKS.

2. **Leptorchis liliifolia** (L.) Kuntze. LARGE TWAYBLADE. (Man. p. 303; I. F. f. 1136.) In moist woods and thickets, Me. to Minn., Ga. and Mo.—*Pennsylvania* : NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; MONROE; LUZERNE; MIFFLIN; DELAWARE; ALLEGHENY.

19. **CORALLORHIZA** R.Br.

Lip not 3-lobed, but often erose or finely toothed.

Lip not notched, clawless : perianth 6-8 mm. long : column narrowly winged.

1. *C. odontorrhiza*.

Lip notched, clawed : perianth 12-14 mm. long : column strongly winged.

2. *C. Wisteriana*.

Lip 3-lobed, the lateral lobes spreading or directed forward.

Spur obsolete : lip shallowly 3-lobed : capsules 8-10 mm. long.

3. *C. Corallorrhiza*.

Spur prominent : lip deeply 3-lobed : capsules 12-20 mm. long.

4. *C. multiflora*.

1. **Corallorrhiza odontorrhiza** (Willd.) Nutt. SMALL-FLOWERED CORAL-ROOT. (Man. p. 305; I. F. f. 1140.) In woods, Mass. to Mich., Fla. and Mo.—*Pennsylvania* : NORTHAMPTON; BUCKS; HUNTINGDON; CENTRE; ERIE; SOMERSET; LANCASTER; ALLEGHENY; CHESTER.

2. **Corallorrhiza Wisteriana** Conrad. WISTER'S CORAL-ROOT. (Man. p. 305; I. F. f. 1141.) In woods, Mass. to Fla., Ohio and Tex.—*Pennsylvania* : PHILADELPHIA; FRANKLIN; LANCASTER; CHESTER.

3. **Corallorrhiza Corallorrhiza** (L.) Karst. EARLY CORAL-ROOT. (Man. p. 305; I. F. f. 1139.) In woods, N. S. to Alaska, N. J., in the mountains to Ga., and to Mich. and Wash.—*Pennsylvania* : WAYNE; TIoga; LANCASTER.

4. **Corallorrhiza multiflora** Nutt. LARGE CORAL-ROOT. (Man. p. 306; I. F. f. 1142.) In woods, N. S. to B. C., Fla., Mo. and Cal.—*Pennsylvania* : MONROE; NORTHAMPTON; LUZERNE; HUNTINGDON; FRANKLIN; BUCKS; COLUMBIA; ARMSTRONG; ERIE; LANCASTER; ALLEGHENY; CHESTER.

20. **APLECTRUM** Nutt.

1. **Aplectrum spicatum** (Walt.) B.S.P. ADAM-AND-EVE. PUTTY-ROOT. (Man. p. 305; I. F. f. 1147.) In woods and swamps, Ont. to the N. W. Terr., Ore., Ga., Mo. and Cal.—*Pennsylvania* : MONROE, Water Gap; LEBANON; HUNTINGDON; LANCASTER; MIFFLIN; CENTRE; ARMSTRONG; ALLEGHENY; FRANKLIN; CHESTER.

21. TIPULARIA Nutt.

1. *Tipularia unifolia* (Muhl.) B.S.P. CRANE-FLY ORCHIS. (Man. p. 304; I. F. f. 1144.) In woods, Vt. to Mich., Fla. and La.—*Pennsylvania*: DELAWARE, near Darby.

Subclass 2. DICOTYLEDONES.

Series 1. CHORIPETALAE.

Order 1. PIPERALES.

FAMILY 1. SAURURACEAE Lindl. LIZARD'S-TAIL FAMILY.

1. SAURURUS L.

1. *Saururus cernuus* L. LIZARD'S-TAIL. (Man. p. 307; I. F. f. 1148.) In swamps and streams, Ont., to Minn., Conn., Fla. and Tex.—*Pennsylvania*: LANCASTER; FRANKLIN; HUNTINGDON; MIFFLIN; YORK; CHESTER; DELAWARE; ALLEGHENY.

Order 2. SALICALES.

FAMILY 1. SALICACEAE Lindl. WILLOW FAMILY.

Bracts incised: disk cup-like: stamens usually 10 or more, rarely 7-8: stigmas elongated and expanded: winter buds with several scales. 1. *POPULUS*.
Bracts entire: disk merely 1 or more axillary glands: stamens less than 10: stigmas short, not expanded: winter buds with 1 scale each. 2. *SALIX*.

1. POPULUS L.

Petioles terete or channeled.

Leaf-blades persistently white tomentose beneath, 3-5-lobed.

1. *P. alba*.

Leaf-blades glabrous or nearly so when mature, not lobed.

Stigmas dilated: leaf-blades acuminate: anthers about as broad as long: capsules less than 1 cm. long. 2. *P. candicans*.

Stigmas narrow: leaf-blades blunt: anthers about twice as long as broad: capsules over 1 cm. long. 3. *P. heterophylla*.

Petioles much flattened laterally.

Leaf-blades ovate or suborbicular.

Leaf-blades crenate-dentate: bracts usually surpassing the pistil.

4. *P. tremuloides*.

Leaf-blades sinuate-dentate: bracts usually shorter than the pistil.

5. *P. grandidentata*.

Leaf-blades deltoid or somewhat reniform.

Stamens 6-8: branches erect.

6. *P. dilatata*.

Stamens 50 or more: branches spreading.

7. *P. deltoides*.

1. *Populus alba* L. WHITE OR SILVER-LEAF POPLAR. (Man. p. 308; I. F. f. 1164.) In yards and along roadsides, N. B. to Va. Native of Eu. and Asia.—*Pennsylvania*: LANCASTER; DELAWARE; ALLEGHENY.

2. *Populus candicans* Ait. BALM OF GILEAD. (Man. p. 309.) In woods and fields, N. B. to N. J., west to Minn., mostly escaped from cult.

—*Pennsylvania*: MONROE; ALLEGHENY; NORTHAMPTON; DELAWARE; LEHIGH; SULLIVAN.

3. *Populus heterophylla* L. SWAMP OR DOWNY POPLAR. (Man. p. 308; I. F. f. 1161.) In swamps, Conn. and N. Y. to Ga. and La., north in the Miss. valley to Ind. and Ark.—*Pennsylvania*: CHESTER; DELAWARE.

4. *Populus tremuloides* Michx. AMERICAN ASPEN. (Man. p. 310; I. F. f. 1170.) In dry or moist soil, Newf. to Alaska, south to N. J. Pa., Ky., in the Rocky Mts. to Mex. and to Lower Cal.—*Pennsylvania*: NORTHAMPTON; MONROE; CHESTER; SCHUYLKILL; DELAWARE; CENTRE; ALLEGHENY; PHILADELPHIA; LACKAWANNA; TIOGA.

5. *Populus grandidentata* Michx. LARGE-TOOTHED ASPEN. (Man. p. 310; I. F. f. 1169.) In rich woods, N. S. to Minn., N. J. and in the Alleghenies to N. C. and Tenn.—*Pennsylvania*: NORTHAMPTON; CHESTER; CARBON; SCHUYLKILL; MONROE; MONTGOMERY; FRANKLIN; CENTRE; DELAWARE; ALLEGHENY; LANCASTER; TIOGA; LACKAWANNA.

6. *Populus dilatata* Ait. LOMBARDY POPLAR. (Man. p. 309.) Commonly escaped from cultivation. Nat. of Eu. *Pennsylvania*: BUCKS; LANCASTER; ALLEGHENY.

7. *Populus deltoides* Marsh. COTTONWOOD. (Man. p. 309; I. F. f. 1172.) In moist soil, especially along streams and lakes, Quebec to the N. W. Terr., south to Fla., Colo. and N. Mex.—*Pennsylvania*: ERIE, Presque Isle; LANCASTER.

2. SALIX L.

A. Capsule glabrous, except for a few silky hairs in *S. fluviatilis*.

Stamens 3-7.

Pedicels slender, three to five times as long as the glands.

Stipules and petioles glandless.

1. *S. nigra*.

Stipules and petioles prominently glandular.

2. *S. lucida*.

Pedicels about twice as long as the glands.

3. *S. fragilis*.

Stamens 2.

Filaments pubescent at the base: bracts caducous.

Pedicels 1-3 mm. long at maturity.

Style manifest: leaf-blades mainly lanceolate.

3. *S. fragilis*.

Style wanting: leaf-blades linear or nearly so.

10. *S. interior*.

Pedicels less than 1 mm. long at maturity.

Branches and branchlets not drooping: leaf-blades lanceolate.

4. *S. alba*.

Branches and branchlets drooping: leaf-blades linear-lanceolate or nearly linear.

5. *S. Babylonica*.

Filaments glabrous: bracts persistent.

a. Leaf-blades toothed.

Leaves with glabrous blades at maturity: capsules pedicelled.

Leaf-blades less than thrice as long as broad, glaucous beneath.

6. *S. glaucophylla*.

Leaf-blades over thrice as long as broad: green beneath.

7. *S. cordata*.

Leaves with densely pubescent blades at maturity: capsules sessile.

8. *S. adenophylla*.

- b. Leaf-blades entire.
- B. Capsule pubescent, usually silky or tomentose.
Filaments distinct.
Capsules markedly pedicelled.
Leaf-blades not densely pubescent beneath at maturity.
Leaf-blades linear or linear-lanceolate.
Filaments pubescent: capsules glabrate. 10. *S. interior*.
Filaments glabrous: capsules permanently pubescent. 11. *S. petiolaris*.
- Leaf-blades oblong, elliptic or ovate-lanceolate.
Bracts reddish brown and pubescent with long hairs, cuneate or obovate. 12. *S. discolor*.
Bracts yellow, linear-oblong or lanceolate. 13. *S. Bebbiana*.
- Leaf-blades densely white-pubescent beneath.
Leaves with the blades white tomentose beneath.
Style wanting, or, if present, less than 1 mm. long.
Leaf-blades mainly ovate-lanceolate, slender-petioled. 13. *S. Bebbiana*.
- Leaf-blades mainly oblanceolate, short-petioled.
Mature pistillate aments 2-3 cm. long: leaf-blades 5-10 cm. long. 14. *S. humilis*.
Mature pistillate aments about 1 cm. long: leaf-blades 2-5 cm. long. 15. *S. tristis*.
Style over 1 mm. long. 16. *S. candida*.
Leaves with the blades silvery silky beneath. 17. *S. sericea*.
Capsules subsessile. 18. *S. viminalis*.
Filaments united. 19. *S. purpurea*.
1. *Salix nigra* Marsh. BLACK WILLOW. (Man. p. 312; I. F. f. 1173.) Along streams and lakes, N. B. to Ont., Fla. and Cal.—*Pennsylvania*: DELAWARE; PHILADELPHIA; BUCKS; CHESTER; NORTHAMPTON; MONROE; LANCASTER; DAUPHIN; ALLEGHENY; FRANKLIN; HUNTINGDON; ERIE; CLEARFIELD.
2. *Salix lucida* Muhl. SHINING WILLOW. (Man. p. 313; I. F. f. 1176.) In swamps and along streams and lakes, Newf. to the N. W. Terr., N. J., Ky. and Neb.—*Pennsylvania*: NORTHAMPTON; LEHIGH; LANCASTER; CHESTER; HUNTINGDON; CLEARFIELD; CRAWFORD.
3. *Salix fragilis* L. CRACK OR BRITTLE WILLOW. (Man. p. 313; I. F. f. 1177.) Escaped, Mass. to N. J. and Pa. Nat. of Ed.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN; FRANKLIN; CHESTER; MONROE.
4. *Salix alba* L. WHITE WILLOW. (Man. p. 313; I. F. f. 1178.) In moist soil, N. B. and Ont. to Pa., sparingly escaped from cult.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; MONROE; HUNTINGDON; CHESTER.
5. *Salix Babylonica* L. WEEPING WILLOW. (Man. p. 314; I. F. f. 1179.) Sometimes spreading from cult. Native of Asia.—*Pennsylvania*: Commonly naturalized along streams, especially on farms, throughout the State.
6. *Salix glaucophylla* Bebb. BROAD-LEAVED WILLOW. (Man. p. 314; I. F. f. 1199.) On sand dunes and in sandy soil, Lake Mich., northern Ill., Wis. and Pa.—*Pennsylvania*: MONROE.

7. *Salix cordata* Muhl. HEART-LEAVED WILLOW. (Man. p. 314; I. F. f. 1198.) In wet soil, N. B. to B. C., south to Va., Mo., Colo. and Calif.—*Pennsylvania*: NORTHAMPTON; LUZERNE; LANCASTER; DAUPHIN; CAMERON; ERIE; FRANKLIN; CHESTER.

7a. *S. cordata angustata* (Pursh) Anders. (Man. p. 314.) LANCASTER; FAYETTE.

8. *Salix adenophylla* Hook. FURRY WILLOW. (Man. p. 315; I. F. f. 1203.) On lake and river shores, Labrador to Ont., Penn. and Mich.—*Pennsylvania*: ERIE, Presque Isle.

9. *Salix myrtilloides* L. BOG WILLOW. (Man. p. 316; I. F. f. 1204.) In bogs, N. B. and Quebec to B. C., south to N. J. and Iowa. Also in northern Eu.—*Pennsylvania*: LANCASTER.

10. *Salix interior* Rowlee. SAND-BAR WILLOW. RIVER-BANK WILLOW. (Man. p. 316; I. F. f. 1181.) Along streams and lakes, Quebec to the N. W. Terr., Va., Ky. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER; DAUPHIN; YORK; ALLEGHENY.

11. *Salix petiolaris* J. E. Smith. SLENDER WILLOW. (Man. p. 316; I. F. f. 1189.) In swamps, N. B. to the N. W. Terr., Tenn. and Mich.—*Pennsylvania*: BUCKS; LANCASTER; CHESTER; DELAWARE.

12. *Salix discolor* Muhl. GLAUCOUS OR PUSSY WILLOW. (Man. p. 316; I. F. f. 1187.) In swamps or on moist hillsides, N. S. to Man., Del. and Mo.—*Pennsylvania*: WAYNE; MONROE; LANCASTER; ERIE; ALLEGHENY; CHESTER.

13. *Salix Bebbiana* Sargent. BEBB'S WILLOW. (Man. p. 317; I. F. f. 1184.) In dry soil and along streams, Anticosti to B. C., south to N. J., Pa., Neb. and Utah.—*Pennsylvania*: MONROE; NORTHAMPTON; CLEARFIELD.

14. *Salix humilis* Marsh. PRAIRIE WILLOW. (Man. p. 317; I. F. f. 1185.) In dry soil, N. S. to Ont., Ga., Tenn. and Mo.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; HUNTINGDON; VENANGO; MONROE; DELAWARE.

15. *Salix tristis* Ait. DWARF GRAY OR SAGE WILLOW. (Man. p. 318; I. F. f. 1186.) In dry soil, N. S. (?), Me. to Minn., south to Fla. and Tenn.—*Pennsylvania*: CHESTER; LANCASTER; LUZERNE; HUNTINGDON; FRANKLIN; MONROE; DELAWARE.

16. *Salix candida* Fluegge. HOARY WILLOW. (Man. p. 318; I. F. f. 1193.) In bogs, Lab. to the N. W. Terr., south to N. J., western N. Y. and Iowa.—*Pennsylvania*: LUZERNE; also reported from PIKE.

17. *Salix sericea* Marsh. SILKY WILLOW. (Man. p. 318; I. F. f. 1188.) In swamps and along streams, Me. to Mich. and Va.—*Pennsylvania*: NORTHAMPTON; LEHIGH; PHILADELPHIA; LANCASTER; MONROE; FRANKLIN; CHESTER; DELAWARE; ALLEGHENY.

18. *Salix viminalis* L. OSIER WILLOW. (Man. p. 318; I. F. f. 1194.) Cult. and occasionally escaped in the Eastern and Middle States. Native of Eu. and Asia.—*Pennsylvania*: DELAWARE.

19. *Salix purpurea* L. PURPLE WILLOW. (Man. p. 320; I. F. f. 1180) Sparingly escaped in the Atlantic States. Native of Eu.—*Pennsylvania*: NORTHAMPTON; LANCASTER.

Order 3. MYRICALES.

FAMILY I. MYRICACEAE Dumort. BAYBERRY FAMILY.

Leaf-blades entire or toothed; stipules wanting; scales surrounding the ovary 2-4, very short, inconspicuous. 1. MYRICA.

Leaf-blades pinnatifid; stipules present; scales surrounding the ovary 8, subulate, conspicuous. 2. COMPTONIA.

1. MYRICA L.

Leaves appearing after the flowers: fruits winged by the partially adnate bractlets, in close heads. 1. *M. Gale*.

Leaves appearing before the flowers: fruits not winged, separate; bractlets deciduous. 2. *M. Carolinensis*.

1. *Myrica Gale* L. SWEET GALE. (Man. p. 321; I. F. f. 1159.) In wet places, Newf. to Alaska, Va., Mich. and Wash.—*Pennsylvania*: MONROE; SUSQUEHANNA; SCHUYLKILL.

2. *Myrica Carolinensis* Mill. WAXBERRY. BAYBERRY. (Man. p. 321; I. F. f. 1161.) In dry or moist sandy soil, N. S. to Fla. and Ala. and on the shores of L. Erie. In bogs in northern N. J. and Pa. *Pennsylvania*: MONROE; SCHUYLKILL; ERIE, Presque Isle; LEBANON; LANCASTER.

2. COMPTONIA Banks.

1. *Comptonia peregrina* (L.) Coulter. SWEET-FERN. (Man. p. 321; I. F. f. 1162.) In dry soil, N. S. to Man., south to N. C. and Ind.—*Pennsylvania*: LACKAWANNA; MONROE; NORTHAMPTON; CHESTER; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; ERIE.

Order 4. JUGLANDALES.

FAMILY I. JUGLANDACEAE Lindl. WALNUT FAMILY.

Staminate aments stout, simple; fruit with an indehiscent epicarp and a sculptured endocarp. 1. JUGLANS.

Staminate aments slender, branched; fruit with a dehiscent epicarp and a smooth endocarp. 2. HICORIA.

1. JUGLANS L.

Fruit globular, glabrous: nuts not angled: heart-wood dark brown.

1. *J. nigra*.

Fruit elongated, viscid-pubescent: nuts angled: heart-wood light brown.

2. *J. cinerea*.

1. *Juglans nigra* L. BLACK WALNUT. (Man. p. 323; I. F. f. 1149.) In rich woods, Mass. to Minn., south to Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; HUNTINGDON; CHESTER; MONROE; LANCASTER; DELAWARE; ALLEGHENY.

2. *Juglans cinerea* L. BUTTERNUT. (Man. p. 323; I. F. f. 1130.) In rich or rocky woods, N. B. to N. Dak., south to Del., in the Alleghenies

to Ga., and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; LEBANON; FRANKLIN; HUNTINGDON; LANCASTER; TIOGA; MONROE; CHESTER; DELAWARE; ALLEGHENY.

2. HICORIA Raf.

Bud-scales valvate: lateral leaflets mostly falcate.

1. *H. minima*.

Bud-scales imbricated: lateral leaflets not falcate.

Middle lobe of the staminate calyx much longer than the lateral: husk of the fruit freely splitting to the base.

Bark close but rough: foliage scurfy or pubescent.

2. *H. alba*.

Bark shaggy, separating in long plates: foliage glabrous or puberulent.

Leaflets 7-9: nuts pointed at both ends.

3. *H. laciniosa*.

Leaflets 3-5: nuts rounded or notched at the base.

4. *H. ovata*.

Middle lobe of the staminate calyx usually about equal to the lateral: husk of the fruit not freely splitting to the base.

Bark shaggy: fruit mostly subglobose: nut thin-shelled: seed sweet.

5. *H. microcarpa*.

Bark close: fruit mostly obovoid: nut thick-shelled: seed bitter.

6. *H. glabra*.

1. *Hicoria minima* (Marsh.) Britton. BITTER-NUT. SWAMP HICKORY. (Man. p. 324; I. F. f. 1152.) In moist woods and swamps, Quebec to Minn., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; LANCASTER; CHESTER; YORK; DELAWARE; BUCKS.

2. *Hicoria alba* (L.) Britton. WHITE-HEART HICKORY. (Man. p. 325; I. F. f. 1156.) In rich soil, Mass. to Ont., Ill. and Neb., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; LANCASTER; HUNTINGDON; MONROE; CHESTER; DELAWARE; PHILADELPHIA.

3. *Hicoria laciniosa* (Michx.) Sargent. BIG SHAG-BARK. (Man. p. 324; I. F. f. 1155.) In rich soil, N. Y. and Pa. to Ind., Iowa, Kans. and Ind. Terr.—*Pennsylvania*: BUCKS; FRANKLIN; HUNTINGDON; LANCASTER; BERKS; YORK; PHILADELPHIA; ALLEGHENY.

4. *Hicoria ovata* (Mill.) Britton. SHELL-BARK HICKORY. (Man. p. 324; I. F. f. 1154.) In rich soil, Quebec to Minn., south to Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; HUNTINGDON; MONROE; LANCASTER; CHESTER; DELAWARE; PHILADELPHIA; ALLEGHENY.

5. *Hicoria microcarpa* (Nutt.) Britton. SMALL-FRUITED HICKORY. (Man. p. 325; I. F. f. 1157.) In rich woods, Mass. to Mich., south to Va. and Mo.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER; FRANKLIN; CHESTER; DELAWARE.

6. *Hicoria glabra* (Mill.) Britton. PIG-NUT HICKORY. (Man. p. 325; I. F. f. 1158.) In dry or moist woods, Me. to Minn., south to Fla. and Tex.—*Pennsylvania*: LANCASTER; FRANKLIN; NORTHAMPTON; CHESTER; DELAWARE; PHILADELPHIA; YORK; BUCKS; ALLEGHENY.

Order 5. FAGALES.

Staminate and pistillate flowers in aments.

Fam. 1. BETULACEAE.

Staminate flowers in aments: pistillate flowers each with an involucre which becomes a cup or bur in fruit.

Fam. 2. FAGACEAE.

FAMILY 1. BETULACEAE Agardh. BIRCH FAMILY.

Staminate flowers solitary in the axil of each bract, without a calyx : pistillate flowers with a calyx.

Staminate flowers without bractlets : pistillate flowers numerous in spike-like aments : nuts relatively small.

Fruit subtended by a flat 3-cleft and incised bractlet. 1. *CARPINUS*.

Fruit enclosed in a membranous bladderly bractlet. 2. *OSTRYA*.

Staminate flowers with 2 bractlets each : pistillate flowers 2-4 in capitate aments : nuts relatively large. 3. *CORYLUS*.

Staminate flowers 3-6 together in the axil of each bract, with a calyx.

Stamens 2 ; filaments 2-cleft, each branch bearing an anther-sac : fruiting bracts 3-lobed or entire, deciduous. 4. *BETULA*.

Stamens 4 : anther-sacs adnate : fruiting bracts woody, erose or toothed, persistent. 5. *ALNUS*.

1. *CARPINUS* L.

1. *Carpinus Caroliniana* Walt. HORNBEAM. WATER BEECH. (Man. p. 326 ; I. F. f. 1207.) In moist woods and along streams, N. S. to Minn., Fla. and Tex.—*Pennsylvania* : MONROE ; NORTHAMPTON ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; BEDFORD ; SOMERSET ; ALLEGHENY ; ERIE.

2. *OSTRYA* Scop.

1. *Ostrya Virginica* (Mill.) Willd. IRON-WOOD. HOP-HORNBEAM. (Man. p. 327 ; I. F. f. 1208.) In dry woods, Cape Breton Id. to Minn., Fla. and Tex.—*Pennsylvania* : PIKE ; TIoga ; NORTHAMPTON ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; SOMERSET ; ERIE, Presque Isle ; ALLEGHENY.

3. *CORYLUS* L.

Involucral bractlets 2, broad, laciniate.

1. *C. Americana*.

Involucral bractlets united, tubular above.

2. *C. rostrata*.

1. *Corylus Americana* Walt. HAZEL-NUT. (Man. p. 327 ; I. F. f. 1209.) In thickets, Me. and Ont. to Man., Fla. and Kans.—*Pennsylvania* : PIKE ; MONROE ; NORTHAMPTON, College Hill ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; HUNTINGDON ; ALLEGHENY.

2. *Corylus rostrata* Ait. BEAKED HAZEL-NUT. (Man. p. 327 ; I. F. f. 1210.) In thickets or woods, N. S. to B. C., Ga., Tenn., Kans. and Ore.—*Pennsylvania* : PIKE ; MONROE ; LACKAWANNA ; NORTHAMPTON ; TIoga ; BERKS ; MONTGOMERY ; CHESTER ; LANCASTER ; FULTON ; HUNTINGDON ; SOMERSET.

4. *BETULA* L.

Pistillate and fruiting aments peduncled.

Bark of trunk chalky white.

Leaf-blades deltoid, acuminate.

1. *B. populifolia*.

Leaf-blades ovate.

2. *B. papyrifera*.

Bark reddish or greenish brown.

3. *B. nigra*.

Pistillate and fruiting aments sessile at the ends of short branches.

a. Bark brown : leaf-blades shining above : mature bracts with 2 short divergent lateral lobes : nut with triangular-obovate wings. 4. *B. lenta*.

- b. Bark yellowish or silvery: leaf-blades dull above: mature bracts with 2 ascending lateral lobes: nuts with orbicular-ovate wings.

5. *B. lutea*.

1. *Betula populifolia* Marsh. WHITE BIRCH. (Man. p. 328; I. F. f. 1211.) In moist or dry soil, N. B. to Ont., Pa. and Del.—*Pennsylvania*: NORTHAMPTON; MONROE; SCHUYLKILL; LUZERNE; SUSQUEHANNA; LACKAWANNA; PIKE; BUCKS, Springfield.

2. *Betula papyrifera* Marsh. PAPER OR CANOE BIRCH. (Man. p. 328; I. F. f. 1212.) In woods, Newf. to Alaska, northern Pa., Mich. and Wash.—*Pennsylvania*: MONROE; HUNTINGDON; CENTRE, Bear Meadows; LUZERNE; BLAIR; TIOGA; LACKAWANNA.

3. *Betula nigra* L. RIVER OR RED BIRCH. (Man. p. 328; I. F. f. 1214.) Along streams and lakes, Mass. to Iowa, Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN; HUNTINGDON; MONROE; TIOGA; CHESTER.

4. *Betula lenta* L. CHERRY, BLACK OR SWEET BIRCH. (Man. p. 328; I. F. f. 1215.) In moist soil or on hillsides, Newf. to western Ont., Fla. and Tenn.—*Pennsylvania*: NORTHAMPTON; LUZERNE; LANCASTER; YORK; FRANKLIN; HUNTINGDON; FULTON; MONROE; LACKAWANNA; TIOGA; PIKE; CHESTER; ALLEGHENY.

5. *Betula lutea* Michx f. YELLOW OR GRAY BIRCH. (Man. p. 329; I. F. f. 1216.) In woods, Newf. to Man., N. C. and Tenn., mainly in the Alleghenies.—*Pennsylvania*: MONROE; DAUPHIN; LANCASTER; HUNTINGDON; SOMERSET; PIKE.

5. **ALNUS** Gaertn.

Leaf-blades glaucous or finely tomentose beneath.

1. *A. incana*.

Leaf-blades green, sometimes sparingly pubescent beneath.

Leaf-blades finely serrate: foliage not glutinous: species native.

2. *A. rugosa*.

Leaf-blades dentate-serrate: foliage glutinous: species naturalized.

3. *A. glutinosa*.

1. *Alnus incana* (L.) Willd. SPECKLED OR HOARY ALDER. (Man. p. 330; I. F. f. 1221.) In wet soil, Newf. to the N. W. Terr., southern N. Y., Pa. and Neb. Also in Eu. and Asia.—*Pennsylvania*: MONROE, Pocono Plateau; LUZERNE; CENTRE; ERIE, Presque Isle; SOMERSET; LACKAWANNA; PIKE; NORTHAMPTON.

2. *Alnus rugosa* (Du Roi) K. Koch. SMOOTH ALDER. (Man. p. 330; I. F. f. 1222.) In wet soil or on hillsides, Me. to Minn., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; LUZERNE; MONROE; BUCKS; CHESTER; LANCASTER; FRANKLIN; SOMERSET; LACKAWANNA; PIKE; ALLEGHENY.

3. *Alnus glutinosa* (L.) Medic. EUROPEAN ALDER. (Man. p. 330; I. F. f. 1223.) In wet places, N. Y., Pa. and N. J., escaped from cult. Native of Eu.—*Pennsylvania*: NORTHAMPTON.

FAMILY 2. **FAGACEAE** Drude. BEECH FAMILY.

Staminate aments globose, drooping on slender-bracted peduncles: nuts 3-angled or 3-winged. 1. **FAGUS**.

Staminate aments elongated, slender.

Staminate aments erect or ascending: nuts 1-3, included in a very spiny involucre. 2. **CASTANEA**.

Staminate aments drooping: nut seated in or rarely surrounded by an involucre of imbricated scales. 3. **QUERCUS**.

1. **FAGUS** L.

1. **Fagus Americana** Sweet. AMERICAN BEECH. (Man. p. 331; I. F. f. 1225.) In rich soil, N. S. to Wis., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; HUNTINGDON; ERIE; CHESTER; MONROE; LACKAWANNA; TIOGA; DELAWARE; ALLEGHENY.

2. **CASTANEA** Adans.

Leaf-blades glabrous: large forest tree.

1. *C. dentata*.

Leaf-blades white-tomentose beneath: shrub or small tree.

2. *C. pumila*.

1. **Castanea dentata** (Marsh.) Borkh. AMERICAN CHESTNUT. (Man. p. 331; I. F. f. 1226.) In rich soil, Me. to Mich. and Tenn.—*Pennsylvania*: NORTHAMPTON; MONROE; CHESTER; LANCASTER; FRANKLIN; YORK; DELAWARE; ALLEGHENY.

2. **Castanea pumila** (L.) Mill. CHINQUAPIN. (Man. p. 332; I. F. f. 1227.) In dry soil, N. J. and Pa. to Ind., Fla. and Tex.—*Pennsylvania*: YORK; LANCASTER; CHESTER.

3. **QUERCUS** L.

A. Leaf-blades or their lobes bristle-tipped: styles elongated: nuts often pubescent within.

a. Leaf-blades pinnatifid or pinnately lobed or dilated near the apex.

Leaf-blades pinnatifid or pinnately lobed.

Leaf-blades green and glabrous on both sides.

Cup of the acorn saucer-shaped.

Cup over 18 mm. wide.

1. *Q. rubra*.

Cup less than 18 mm. wide.

2. *Q. palustris*.

Cup of the acorn turbinate.

3. *Q. coccinea*.

Leaf-blades pubescent beneath.

Cup of the acorn turbinate: leaf-blades brown or rusty-pubescent beneath.

4. *Q. velutina*.

Cup of the acorn saucer-shaped: leaf-blades gray- or white-pubescent beneath.

Large tree: leaves with lanceolate lobes.

5. *Q. digitata*.

Shrub or small tree: leaves with triangular lobes.

6. *Q. nana*.

Leaf-blades dilated near the apex.

Cup of the acorn saucer-shaped: leaf-blades spatulate, glabrous.

7. *Q. nigra*.

Cup of the acorn hemispheric: leaf-blades obovate, brown-tomentose beneath.

8. *Q. Marylandica*.

- b. Leaf-blades entire, rarely lobed or toothed on vigorous shoots.
 - Lower surface of the leaf-blades glabrous. 9. *Q. Phellos.*
 - Lower surface of the leaf-blades pubescent. 10. *Q. imbricaria.*
- B. Leaf-blades or their lobes or teeth without bristles (except on shoots): nuts often glabrous within.
 - Leaf-blades prominently and deeply lobed.
 - Mature leaf-blades glabrous and pale, or glaucous beneath: cups shallow. 11. *Q. alba.*
 - Mature leaf-blades pubescent beneath: cup fully $\frac{1}{3}$ as long as the nut. 12. *Q. minor.*
 - Upper scales of the cup not awned. 13. *Q. macrocarpa.*
 - Upper scales of the cup awned.
 - Leaf-blades coarsely toothed.
 - Acorns peduncled.
 - Peduncles much longer than the petioles. 14. *Q. platanoides.*
 - Peduncles mostly shorter than the petioles. 15. *Q. Prinus.*
 - Acorns sessile.
 - Tall tree: leaf-blades mostly broadest below the middle. 16. *Q. acuminata.*
 - Diffuse shrub or small tree: leaf-blades broadest above the middle. 17. *Q. prinoides.*

1. *Quercus rubra* L. RED OAK. (Man. p. 333; I. F. f. 1228.) N. S. to Minn., Fla., Kans., and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONROE; LANCASTER; HUNTINGDON; CHESTER; LACKAWANNA; TIOGA; FRANKLIN; DELAWARE; ALLEGHENY.

2. *Quercus palustris* Du Roi. SWAMP OR PIN OAK. (Man. p. 333; I. F. f. 1229.) In moist ground, Mass. to Wis., Del. and Ark.—*Pennsylvania*: CHESTER; HUNTINGDON; FRANKLIN; LANCASTER; YORK; DELAWARE; ALLEGHENY.

3. *Quercus coccinea* Wang. SCARLET OAK. (Man. p. 333; I. F. f. 1231.) In dry soil, Me. to Minn., Fla. and Mo.—*Pennsylvania*: CHESTER; MONROE; HUNTINGDON; LANCASTER; NORTHAMPTON; LACKAWANNA; FRANKLIN; DELAWARE; ALLEGHENY.

4. *Quercus velutina* Lam. BLACK OAK. QUERCITRON. (Man. p. 334; I. F. f. 1232.) Me. to Minn., Fla. and Tex.—*Pennsylvania*: HUNTINGDON; FRANKLIN; LANCASTER; CHESTER; MONROE; DELAWARE; ALLEGHENY.

5. *Quercus digitata* (Marsh.) Sudw. SPANISH OAK. (Man. p. 334; I. F. f. 1233.) In dry soil, N. Y., N. J. to Fla., Mo. and Tex.—*Pennsylvania*: CHESTER; DELAWARE; PHILADELPHIA; FRANKLIN.

6. *Quercus nana* (Marsh.) Sargent. BEAR OR SCRUB OAK. (Man. p. 334; I. F. f. 1234.) In sandy or rocky soil, Me. to O., N. C. and the mountains of Va. and Ky.—*Pennsylvania*: MONROE; NORTHAMPTON; PIKE; LANCASTER; HUNTINGDON; CHESTER; FRANKLIN; DELAWARE; ALLEGHENY.

7. *Quercus nigra* L. WATER OAK. (Man. p. 335; I. F. f. 1236.) Along streams and swamps, Del. to Ky., Mo., Fla. and Tex. Adv. northward.—*Pennsylvania*: Locally introduced in the southeastern part of the State.

8. *Quercus Marylandica* Muench. BLACK-JACK or BARREN OAK. (Man. p. 334; I. F. f. 1235.) In dry soil, L. I. to O., Neb., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BERKS; BUCKS, Bristol; LANCASTER; CHESTER; DELAWARE; CRAWFORD; MONTGOMERY.

9. *Quercus Phellos* L. WILLOW OAK. (Man. p. 335; I. F. f. 1237.) In moist woods, L. I., N. Y. to Fla., Mo. and Tex.—*Pennsylvania*: PHILADELPHIA; CHESTER; LANCASTER; BUCKS; DELAWARE.

10. *Quercus imbricaria* Michx. SHINGLE OAK. (Man. p. 335; I. F. f. 1239.) Central Pa. to Mich., Neb., Ga., Tenn. and Ark.—*Pennsylvania*: LEHIGH; HUNTINGDON; BEDFORD; INDIANA; PHILADELPHIA, Haddington; ALLEGHENY.

11. *Quercus alba* L. WHITE OAK. (Man. p. 335; I. F. f. 1240.) Me. to Minn., Fla. and Tex.—*Pennsylvania*: FRANKLIN; DELAWARE; NORTHAMPTON; LANCASTER; CHESTER; MONROE, Pocono; LACKAWANNA; TIOGA; ALLEGHENY.

12. *Quercus minor* (Marsh.) Sargent. POST OR IRON OAK. (Man. p. 335; I. F. f. 1241.) In dry soil, Mass. to Mich., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; CHESTER; LANCASTER; FRANKLIN; LEBANON; DELAWARE.

13. *Quercus macrocarpa* Michx. MOSSY-CUP OR BUR OAK. (Man. p. 336; I. F. f. 1243.) In rich soil, N. S. to Man., Mass., Pa., Kans. and Tex.—*Pennsylvania*: HUNTINGDON; FRANKLIN; NORTHAMPTON; CENTRE; ALLEGHENY.

14. *Quercus platanoides* (Lam.) Sudw. SWAMP WHITE OAK. (Man. p. 336; I. F. f. 1244.) In moist or swampy soil, Quebec to Mich., Ga. and Ark.—*Pennsylvania*: NORTHAMPTON; LANCASTER; MONROE; FRANKLIN; YORK; CHESTER; DELAWARE; ALLEGHENY.

15. *Quercus Prinus* L. ROCK CHESTNUT OAK. (Man. p. 336; I. F. f. 1246.) In dry soil, Me. to Ont., Ala. and Tenn.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; BEDFORD; HUNTINGDON; MONROE; YORK; ALLEGHENY.

16. *Quercus acuminata* (Michx.) Sargent. CHESTNUT OR YELLOW OAK. (Man. p. 336; I. F. f. 1247.) In dry soil, preferring limestone ridges, Vt. and Ont. to Minn., Ala. and Tex.—*Pennsylvania*: HUNTINGDON; FRANKLIN; LANCASTER; NORTHAMPTON; CHESTER.

17. *Quercus prinoides* Willd. SCRUB CHESTNUT OAK. (Man. p. 336; I. F. f. 1248.) In dry sandy or rocky soil, Me. to Minn., Ala. and Tex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; HUNTINGDON; CENTRE; FRANKLIN; BLAIR; LEBANON; LACKAWANNA; MONROE; PIKE; DELAWARE.

Order 6. URTICALES.

A. Fruit an achene, the achenes sometimes in the accrescent sepals and forming a syncarp.

a. Flowers not on a receptacle: fruits not forming syncarps: sepals neither thick and juicy nor enveloping the achenes.

*Style or stigma 1, the latter sometimes tufted: ovule erect: filaments inflexed in the bud.

Fam. 1. URTICACEAE.

****Styles or stigmas 2 : ovule pendulous : filaments erect in the bud.**

Fam. 2. CANNABINACEAE.

b. Flowers on the outside or inside of a receptacle : fruits forming syncarps : sepals accrescent, enveloping the achenes. Fam. 3. MORACEAE.

B. Fruit a samara or a drupe, sometimes nut-like. Fam. 4. ULMACEAE.

FAMILY 1. URTICACEAE Reichenb. NETTLE FAMILY.

Plants armed with stinging hairs.

Leaves opposite : staminate flowers with 4 sepals and 4 stamens : achenes equilateral : style terminal. 1. URTICA.

Leaves alternate : staminate flowers with 5 sepals and 5 stamens : achene oblique : style lateral. 2. URTICASTRUM.

Plants glabrous, or at least destitute of stinging hairs.

Flower-clusters not involucrate : leaves mostly opposite.

Flower-clusters in axillary often clustered cymes : achene not included.

3. ADICIA.

Flower-clusters spicate on slender mostly simple branches : achene included. 4. BOEHMERIA.

Flower-clusters involucrate : leaves alternate. 5. PARIETARIA.

1. URTICA L.

Stems copiously bristly : leaf-blades of an ovate type.

1. *U. dioica*.

Stems sparingly bristly : leaf-blades of a lanceolate type.

2. *U. gracilis*.

1. *Urtica dioica* L. STINGING OR GREAT NETTLE. (Man. p. 342 ; I. F. f. 1263.) In waste places, N. S. to Minn., S. C. and Mo. Nat. from Eu. — *Pennsylvania* : NORTHAMPTON ; LANCASTER ; HUNTINGDON ; FRANKLIN ; CHESTER ; DELAWARE.

2. *Urtica gracilis* Ait. SLENDER NETTLE. (Man. p. 342 ; I. F. f. 1264.) In dry soil, N. S. to B. C., N. C., La. and Kans. — *Pennsylvania* : NORTHAMPTON ; LANCASTER ; HUNTINGDON ; ERIE ; MONROE ; FRANKLIN ; ALLEGHENY.

2. URTICASTRUM Fabr.

1. *Urticastrum divaricatum* (L.) Kuntze. WOOD-NETTLE. (Man. p. 343 ; I. F. f. 1267.) In rich woods, N. S. to Minn., Fla. and Kans. — *Pennsylvania* : NORTHAMPTON ; LANCASTER ; HUNTINGDON ; ERIE ; FRANKLIN ; MONROE ; DELAWARE ; ALLEGHENY.

3. ADICIA Raf.

1. *Adicia pumila* (L.) Raf. CLEARWEED. RICHWEED. (Man. p. 343 ; I. F. f. 1268.) In moist, wet places, N. B. to Ont., Minn., La. and Kans. Also in Japan. — *Pennsylvania* : NORTHAMPTON ; YORK ; FRANKLIN ; HUNTINGDON ; ERIE ; CHESTER ; LANCASTER ; DELAWARE ; ALLEGHENY.

4. BOEHMERIA Jacq.

1. *Boehmeria cylindrica* (L.) Willd. FALSE NETTLE. (Man. p. 343 ; I. F. f. 1269.) In moist soil, Quebec to Minn., Fla. and Kans. — *Pennsylvania* : NORTHAMPTON ; BUCKS ; LANCASTER ; COLUMBIA ; FRANKLIN ; CHESTER ; DELAWARE.

1a. *B. cylindrica scabra* Porter. (Man. p. 343.) NORTHAMPTON; LANCASTER; BEDFORD; CRAWFORD; ERIE.

5. PARIETARIA L.

1. *Parietaria Pennsylvanica* Muhl. PENNSYLVANIA PELLITORY. (Man. p. 343; I. F. f. 1270.) On dry rocks and banks, Ont. to B. C., Fla., Colo. and Mex.—*Pennsylvania*: BUCKS; LANCASTER; FRANKLIN; CHESTER.

FAMILY 2. CANNABINACEAE Lindl. HOP OR HEMP FAMILY.

Stems twining: leaf-blades usually 3-lobed: fruit a drooping cone with thin imbricated bracts. 1. HUMULUS.

Stems erect: leaf-blades 3-7-parted: fruit spicate on stiff branches.

2. CANNABIS.

1. HUMULUS L.

1. *Humulus Lupulus* L. HOP. (Man. p. 341; I. F. f. 1261.) In thickets and on river banks, N. S. to Man., Pa., in the Alleghenies to Ga.; to Kans., and in the Rocky Mts. to Ariz. and N. Mex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; ERIE; YORK; CHESTER; DELAWARE; ALLEGHENY.

2. CANNABIS L.

1. *Cannabis sativa* L. HEMP. (Man. p. 341; I. F. f. 1262.) In waste places, N. B. to Minn., N. C., Tenn. and Kans.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; LANCASTER; CHESTER; ALLEGHENY.

FAMILY 3. MORACEAE Lindl. MULBERRY FAMILY.

Staminate and pistillate flowers in ament-like spikes. 1. MORUS.

Staminate flowers in ament-like racemes: pistillate flowers in heads.

Plants armed; leaves entire.

2. TOXYLON.

Plants unarmed; leaves serrate and often lobed.

3. BROUSSONETIA.

1. MORUS L.

Leaf-blades softly pubescent beneath: fruit deep red or purplish. 1. *M. rubra*.

Leaf-blades glabrous or slightly hairy on the nerves beneath: fruit white or pinkish. 2. *M. alba*.

1. *Morus rubra* L. RED MULBERRY. (Man. p. 340; I. F. f. 1257.) In rich soil, Vt. to S. Dak., south to Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; ALLEGHENY; CAMBRIA; CHESTER; DELAWARE.

2. *Morus alba* L. WHITE MULBERRY. (Man. p. 340; I. F. f. 1258.) In woods or waste places, Me. and Ont. to Fla. Introduced from the Old World.—*Pennsylvania*: NORTHAMPTON; LANCASTER; COLUMBIA; FRANKLIN; PHILADELPHIA; CHESTER; DELAWARE; ALLEGHENY.

2. TOXYLON Raf.

1. *Toxylon pomiferum* Raf. OSAGE ORANGE. (Man. p. 340; I. F. f. 1259.) In rich soil, Mo. and Kans. to Tex.—*Pennsylvania*: DELAWARE.

3. BROUSSONETIA L'Her.

1. *Broussonetia papyrifera* (L.) Vent. PAPER MULBERRY. (Man. p. 340; I. F. f. 1260.) Escaped, N. Y. to Ga. and Mo.—*Pennsylvania*: LANCASTER; FRANKLIN.

FAMILY 4. ULMACEAE Mirbel. ELM FAMILY.

Fruit a samara: embryo straight.

1. ULMUS.

Fruit a drupe: embryo with conduplicate cotyledons.

2. CELTIS.

1. ULMUS L.

Leaf-blades smooth, or roughish above: samaras 10–12 mm. long.

1. *U. Americana*.

Leaf-blades very rough above: samaras 14–24 mm. long.

Leaf-blades typically over 10 cm. long and samaras over 2 cm. long: native species.

2. *U. fulva*.

Leaf-blades typically less than 9 cm. long and samaras less than 2 cm. long: naturalized species.

3. *U. campestris*.

1. *Ulmus Americana* L. AMERICAN, WHITE OR WATER ELM. (Man. p. 338; I. F. f. 1250.) In moist soil, Newf. to Man., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; HUNTINGDON; MONROE; TIOGA; FRANKLIN; CHESTER; DELAWARE; ALLEGHENY.

2. *Ulmus fulva* Michx. SLIPPERY OR RED ELM. (Man. p. 338; I. F. f. 1253.) In woods and along streams, Quebec to N. Dak., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; MONTGOMERY; LANCASTER; HUNTINGDON; FRANKLIN; CHESTER; DELAWARE; ALLEGHENY.

3. *Ulmus campestris* L. (Man. p. 338.) Adventive or naturalized from Eu.—*Pennsylvania*: NORTHAMPTON, on Bushkill.

2. CELTIS L.

Leaf-blades smooth or nearly so above.

1. *C. occidentalis*.

Leaf-blades very rough above.

2. *C. crassifolia*.

1. *Celtis occidentalis* L. HACKBERRY. SUGAR-BERRY. (Man. p. 339; I. F. f. 1255.) In dry soil, Quebec to Man., La., N. C., Mo. and Kans.—*Pennsylvania*: NORTHAMPTON; DAUPHIN; LANCASTER; FRANKLIN; HUNTINGDON; MONROE; CHESTER; DELAWARE; ALLEGHENY.

2. *Celtis crassifolia* Lam. HACKBERRY. (Man. p. 339.) N. Y. to S. C., Ohio, Ill., Mo. and Tenn.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN.

Order 7. SANTALALES.

Tree-parasites: leaves opposite, often scale-like: fruit baccate.

Fam. 1. LORANTHACEAE.

Root-parasites: leaves alternate (in our genera): fruit a drupe or nut.

Fam. 2. SANTALACEAE.

FAMILY 1. LORANTHACEAE D. Don. MISTLETOE FAMILY.

Anthers 1-celled: berry peduncled: leaves scale-like, with united bases.

1. RAZOUMOVSKYA.

Anthers 2-celled: berry sessile: leaves with thick flat blades.

2. PHORADENDRON.

1. RAZOUMOFSKYA Hoffm.

1. *Razoumofskya pusilla* (Peck) Kuntze. SMALL MISTLETOE. (Man. p. 344; I. F. f. 1271.) On twigs of spruces, N. H., northern N. Y. and the Pocono region of Pa.—*Pennsylvania*: MONROE, Lehigh Pond, bog near Tannersville on *Picea Mariana*; PIKE.

2. PHORADENDRON Nutt.

1. *Phoradendron flavescens* (Pursh) Nutt. AMERICAN MISTLETOE. (Man. p. 345; I. F. f. 1272.) Parasitic on deciduous trees, N. J. to Mo., Fla. and Tex.—*Pennsylvania*: LANCASTER; SCHUYLKILL; FRANKLIN; DELAWARE; CHESTER.

FAMILY 2. SANTALACEAE R. Br. SANDALWOOD FAMILY.

Herbs: flowers perfect.

1. COMANDRA.

Shrubs: flowers dioecious or polygamous.

2. PYRULARIA.

1. COMANDRA Nutt.

1. *Comandra umbellata* (L.) Nutt. BASTARD TOAD-FLAX. (Man. p. 345; I. F. f. 1273.) In dry fields and thickets, Cape Breton Island to B. C., Ga. and Calif.—*Pennsylvania*: NORTHAMPTON; MONROE; BUCKS; LANCASTER; LEBANON; HUNTINGDON; PIKE; CHESTER; DELAWARE; ALLEGHENY.

2. PYRULARIA Michx.

1. *Pyrularia pubera* Michx. OIL-NUT. BUFFALO-NUT. (Man. p. 346; I. F. f. 1276.) In rich woods, Pa. to Ga., mostly in the mountains. *Pennsylvania*: WESTMORELAND, near Mt. Pleasant.

Order 8. ARISTOLOCHIALES.

FAMILY 1. ARISTOLOCHIACEAE Blume. BIRTHWORT FAMILY.

Acaulescent herbs: perianth regular, persistent: filaments distinct.

1. ASARUM.

Caulescent vines or herbs: perianth irregular, deciduous: anthers sessile.

2. ARISTOLOCHIA.

1. ASARUM L.

Sepals lanceolate-acuminate, not reflexed, longer than the hypanthium.

1. *A. Canadense*.

Sepals triangular, merely acute, reflexed, about as long as the hypanthium.

2. *A. reflexum*.

1. *Asarum Canadense* L. WILD GINGER. (Man. p. 348; I. F. f. 1277.) In rich woods, N. B. to Quebec, Ont. and N. C.—*Pennsylvania*: NORTHAMPTON; LANCASTER; ALLEGHENY; HUNTINGDON; ERIE; SOMERSET; CHESTER; DELAWARE.

2. *Asarum reflexum* Bicknell. SHORT-LOBED WILD GINGER. (Man. p. 349; I. F. f. 1277b.) In rich soil, along streams, Conn. to Iowa, N. C. and Kans.—*Pennsylvania*: DELAWARE; LANCASTER; FRANKLIN; BUCKS; NORTHAMPTON; ALLEGHENY.

2. **ARISTOLOCHIA** L.

Low herb: calyx about 1 cm. broad: capsules globular, about 1 cm. in diameter.

1. *A. Serpentaria*.

Tall twining vine: calyx about 2 cm. broad: capsules oblong-cylindric, 5-7.5 cm. long.

2. *A. macrophylla*.

1. *Aristolochia Serpentaria* L. VIRGINIA SNAKEROOT. (Man. p. 349; I. F. f. 1281.) In dry woods, Conn. to Mich., Fla., La. and Mo.—*Pennsylvania*: NORTHAMPTON; DELAWARE; BERKS; FRANKLIN; HUNTINGDON; WESTMORELAND; ARMSTRONG; LANCASTER; SOMERSET; CHESTER; ALLEGHENY.

2. *Aristolochia macrophylla* Lam. DUTCHMAN'S PIPE. (Man. p. 350; I. F. f. 1283.) In rich woods, Pa. to Minn., Ga. and Kans.—*Pennsylvania*: GREENE; ALLEGHENY.

Order 9. **POLYGONALES**.FAMILY I. **POLYGONACEAE** Lindl. BUCKWHEAT FAMILY.

Stigmas tufted.

1. RUMEX.

Stigmas minute, capitate.

Seed with an embryo dividing the endosperm by an S-shaped curve.

2. FAGOPYRUM.

Seed with an embryo curved along one angle of the endosperm.

3. POLYGONUM.

1. **RUMEX** L.

Leaf-blades hastate: flowers dioecious: plants acid.

Inner sepals not developing wings: achene granular. 1. *R. Acetosella*.

Inner sepals developing wings at maturity: achene smooth.

2. *R. Acetosa*.

Leaf-blades not hastate: flowers perfect or polygamo-dioecious: plants scarcely or not at all acid.

Leaves with flat blades, manifestly bright or light green, or glaucescent.

All 3 sepal-wings usually bearing tubercles.

3. *R. verticillatus*.

Only 1 sepal-wing usually bearing a tubercle.

4. *R. altissimus*.

Leaves with crisped blades, manifestly dark or deep green, not glaucescent.

Sepal-wings entire, more or less undulate.

Lower leaf-blades narrowed or acuminate at the base.

Only 1 sepal-wing bearing a tubercle.

5. *R. Patientia*.

All 3 sepal-wings bearing a tubercle.

6. *R. Britannica*.

Lower leaf-blades rounded or cordate at the base.

All 3 sepal-wings usually bearing tubercles.

7. *R. crispus*.

Only 1 sepal-wing bearing a tubercle.

8. *R. sanguineus*.

Sepal-wings fringed with spiny teeth.

9. *R. obtusifolius*.

1. *Rumex Acetosella* L. FIELD OR SHEEP SORREL. (Man. p. 354; I. F. f. 1299.) In dry fields and on hillsides throughout N. Am. except the extreme north. Chiefly nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; FRANKLIN; COLUMBIA; HUNTINGDON; MONROE; TIOGA; CHESTER; DELAWARE; ALLEGHENY.

2. *Rumex Acetosa* L. SORREL. SOUR DOCK. (Man. p. 355; I. F. f. 1301.) In sandy or stony soil, Labrador to Alaska. Nat. from Eu. in Vt., N. Y. and Pa.—*Pennsylvania*: TIOGA, Brookfield.

3. *Rumex verticillatus* L. SWAMP DOCK. (Man. p. 355; I. F. f. 1304.) In swamps, Quebec to Iowa, Fla. and Tex.—*Pennsylvania*: FRANKLIN; SUSQUEHANNA.

4. *Rumex altissimus* Wood. TALL OR PEACH-LEAVED DOCK. (Man. p. 355; I. F. f. 1305.) Along streams and in swamps, Mass. to Neb. and Tex.—*Pennsylvania*: LANCASTER, Safe Harbor; CRAWFORD.

5. *Rumex Patientia* L. PATIENCE DOCK. (Man. p. 356; I. F. f. 1306.) In waste places, Vt. to Wis., Pa. and Kans. Nat. from Eu.—*Pennsylvania*:

6. *Rumex Britannica* L. GREAT WATER-DOCK. (Man. p. 356; I. F. f. 1307.) In wet places, N. B. to Minn., N. J., Pa., Ill. and Iowa.—*Pennsylvania*: WAYNE.

7. *Rumex crispus* L. CURLED DOCK. (Man. p. 356; I. F. f. 1309.) In fields and waste places, nearly throughout the U. S. and southern B. Am. Nat. from Eu. Native also of Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; DELAWARE; ALLEGHENY.

8. *Rumex sanguineus* L. BLOODY OR RED-VEINED DOCK. (Man. p. 356; I. F. f. 1311.) In waste places and ballast, N. Y. to Va. and La. Nat. or adv. from Eu.—*Pennsylvania*: BUCKS, Rockfield.

9. *Rumex obtusifolius* L. BROAD-LEAVED OR BITTER DOCK. (Man. p. 357; I. F. f. 1313.) In waste places, N. S. and N. B. to Ore., Fla. and Tex. Native also of Asia. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; CENTRE; CHESTER; LANCASTER; MONROE; DELAWARE; ALLEGHENY.

2. FAGOPYRUM L.

1. *Fagopyrum Fagopyrum* (L.) Karst. BUCKWHEAT. (Man. p. 358; I. F. f. 1316.) In waste places, escaped in all parts of northern U. S. and southern B. Am. Native of eastern Eu. or western Asia.—*Pennsylvania*: NORTHAMPTON; MONROE; LANCASTER; CUMBERLAND.

3. POLYGONUM L.

Leaf-blades jointed at the base : ocreae 2-lobed, becoming lacerate : filaments, at least the inner, dilated.

Stems branched at the base, the branches prostrate or spreading.

Achene pointed at the apex, rounded at the base.

Leaf-blades mostly acute at the apex : achenes not pinched at the apex.

1. *P. aviculare*.

Leaf-blades mostly obtuse at the apex : achenes pinched at the apex.

2. *P. littorale*.

Achene pointed at both ends.

3. *P. Bellardi*.

Stems erect or ascending, more or less diffusely branched above.

Leaf-blades without lateral impressions : mature calyx corrugated.

4. *P. erectum*.

Leaf-blades with lateral impressions : mature calyx not corrugated.

5. *P. tenue*.

Leaf-blades not jointed at the base : ocreae various, not 2-lobed : filaments slender.

Ocreae cylindric, truncate or with a spreading limb.

Sepals 4: calyx curved: stamens 4.

6. *P. Virginianum*.

Sepals 5, if fewer the stamens more than 5: calyx not curved.

Racemes solitary or 2: plants mainly aquatic.

Ocreae without spreading borders.

Leaf-blades with more or less acuminate tips.

7. *P. emersum*.

Leaf-blades blunt or merely acute at the apex.

8. *P. amphibium*.

Ocreae with spreading borders.

9. *P. Hartwrightii*.

Racemes several or numerous: plants mainly terrestrial.

Ocreae without spreading limbs.

Ocreae naked or merely ciliolate.

Racemes more or less drooping.

Styles united only at the base.

10. *P. incarnatum*.

Styles united to beyond the middle.

11. *P. lapathifolium*.

Racemes erect.

12. *P. Pennsylvanicum*.

Ocreae fringed with bristles.

Racemes erect.

Flower-clusters contiguous or mainly so.

Achenes lenticular.

13. *P. Persicaria*.

Achenes 3-angled.

Racemes oblong-cylindric.

13. *P. Persicaria*.

Racemes linear.

14. *P. hydropiperoides*.

Flower-clusters mostly separated.

15. *P. punctatum*.

Racemes drooping.

Flower-clusters contiguous: foliage strigose.

16. *P. Careyi*.

Flower-clusters mostly separated: foliage glabrous or nearly so.

17. *P. Hydropiper*.

Ocreae with spreading limbs.

18. *P. orientale*.

Ocreae oblique, more or less open on the side facing the leaf.

Sepals neither keeled nor winged.

Leaf-blades sagittate: achenes 3-angled.

19. *P. sagittatum*.

Leaf-blades hastate: achenes lenticular.

20. *P. arifolium*.

Sepals keeled or winged, conspicuously so at maturity.

Stems stout, erect, not twining.

21. *P. Zuccarinii*.

Stems relatively slender, twining.

Outer sepals keeled at maturity.

Inflorescence consisting mostly of axillary and terminal clusters and simple racemes: achene granular.

22. *P. Convolvulus*.

Inflorescence consisting mostly of axillary and terminal panicle racemes: achene smooth.

23. *P. cilinode*.

Outer sepals developing conspicuous wings.

Sepal-wings not incised.

24. *P. scandens*.

Sepal-wings incised.

25. *P. cristatum*.

1. *Polygonum aviculare* L. KNOTWEED. DOOR-WEED. (Man. p. 363; I. F. f. 1337.) In cultivated and waste grounds, almost throughout N. Am. Asia and Eu.—*Pennsylvania*: NORTHAMPTON; CHESTER; BUCKS; ERIE; LANCASTER; MONROE; FRANKLIN; DELAWARE; ALLEGHENY.

2. *Polygonum littorale* Link. SHORE KNOTWEED. (Man. p. 363; I. F. f. 1338.) On shores and in waste places, N. B. to Calif., Va., Ill. and Kans. Also in Eu.—*Pennsylvania*: NORTHAMPTON; LYCOMING.

3. *Polygonum Bellardi* All. BELLARD'S KNOTWEED. (Man. p. 363; I. F. f. 1339.) In waste grounds. Locally in the eastern U. S. Adv. from eastern Eu. or western Asia.—*Pennsylvania*: PHILADELPHIA, Mifflin St. Wharf.

4. *Polygonum erectum* L. ERECT KNOTWEED. (Man. p. 364; I. F. f. 1342.) In moist or dry soil, Ont. to the N. W. Terr., Tenn. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

5. *Polygonum tenue* Michx. SLENDER KNOTWEED. (Man. p. 365; I. F. f. 1346.) Dry soil, Ont. to Minn., Ga. and Ark.—*Pennsylvania*: NORTHAMPTON; DELAWARE; LANCASTER; LEBANON; LACKAWANNA; FRANKLIN; BUCKS; CHESTER; YORK.

6. *Polygonum Virginianum* L. VIRGINIA KNOTWEED. (Man. p. 363; I. F. f. 1336.) In woods, N. S. to Minn., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; ERIE; FRANKLIN; LANCASTER; CHESTER; DELAWARE; ALLEGHENY.

7. *Polygonum emersum* (Michx.) Britton. SWAMP PERSICARIA. (Man. p. 360; I. F. f. 1321.) In swamps or moist soil, Ont. to B. C., Va., La. and Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; FRANKLIN; DAUPHIN; CHESTER.

8. *Polygonum amphibium* L. WATER PERSICARIA. (Man. p. 360; I. F. f. 1319.) In ponds and lakes, Quebec to Alaska, northern N. Y., Ky., Colo. and Calif. Also in Eu.—*Pennsylvania*: HUNTINGDON, in the Juniata; ERIE; LANCASTER; NORTHAMPTON.

9. *Polygonum Hartwrightii* A. Gray. HARTWRIGHT'S PERSICARIA. (Man. p. 360; I. F. f. 1320.) In swamps or moist soil, Hudson Bay to Ore., Pa., Kans., Nev. and Lower Calif.—*Pennsylvania*: FRANKLIN; CRAWFORD, Hammarby; MONROE, Delaware Water Gap.

10. *Polygonum incarnatum* Ell. SLENDER PINK PERSICARIA. (Man. p. 360; I. F. f. 1323.) In wet soil, Vt. to Ill., Fla. and La.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN; FRANKLIN; YORK.

11. *Polygonum lapathifolium* L. DOCK-LEAVED PERSICARIA. (Man. p. 361; I. F. f. 1324.) In waste places, throughout temperate N. Am. Nat. from Eu. Native also of Asia.—*Pennsylvania*: CHESTER, W. Chester.

12. *Polygonum Pennsylvanicum* L. PENNSYLVANIA PERSICARIA. (Man. p. 361; I. F. f. 1325.) In moist soil, N. S. to Minn., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; FRANKLIN; CHESTER; LANCASTER; DELAWARE; ALLEGHENY.

13. *Polygonum Persicaria* L. LADY'S THUMB. (Man. p. 361; I. F. f. 1327.) In waste places, throughout N. Am., except the extreme north. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; ERIE; FRANKLIN; CHESTER; LANCASTER; MONROE; DELAWARE; ALLEGHENY.

14. *Polygonum hydropiperoides* Michx. MILD WATER PEPPER. (Man. p. 362; I. F. f. 1332.) In swamps or wet soil, N. B. to Calif., Fla. and Mex.—*Pennsylvania*: NORTHAMPTON; DAUPHIN; FRANKLIN; BUCKS; CHESTER; LANCASTER; PIKE; DELAWARE; ALLEGHENY.

15. *Polygonum punctatum* Ell. DOTTED OR WATER SMART WEED. (Man. p. 362; I. F. f. 1334.) In swamps and wet places, throughout N. Am. except the extreme north.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

16. *Polygonum Carey* Olney. CAREY'S PERSICARIA. (Man. p. 362; I. F. f. 1329.) In marshes, Mich. to R. I., N. J. and Pa.—*Pennsylvania*: MONROE, Pocono Summit; CARBON.

17. *Polygonum Hydropiper* L. SMART-WEED. WATER PEPPER. (Man. p. 362; I. F. f. 1333.) In moist waste places, almost throughout N. Am. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; MONROE; FRANKLIN; DELAWARE; ALLEGHENY.

18. *Polygonum orientale* L. PRINCE'S FEATHER. (Man. p. 363; I. F. f. 1335.) In waste places, generally escaped in eastern N. Am. Nat. of India.—*Pennsylvania*: NORTHAMPTON; LANCASTER; BUCKS; FRANKLIN; CHESTER; DAUPHIN; DELAWARE; ALLEGHENY.

19. *Polygonum sagittatum* L. ARROW-LEAVED TEAR-THUMB. (Man. p. 366; I. F. f. 1354.) In wet soil, Newf. to the N. W. Terr., Fla. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; ERIE; FRANKLIN; CHESTER; LANCASTER; YORK; MONROE; DELAWARE; ALLEGHENY.

20. *Polygonum arifolium* L. HALBERD-LEAVED TEAR-THUMB. (Man. p. 366; I. F. f. 1355.) In moist or wet soil, N. B. to Minn., S. C.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; HUNTINGDON; BUCKS; CHESTER; LANCASTER; DELAWARE, Tinicum; ALLEGHENY.

21. *Polygonum Zuccarinii* Small. JAPANESE KNOTWEED. (Man. p. 366; I. F. f. 1353.) Escaped from cultivation, Pa., N. Y., N. J. and Mo. Nat. of Japan.—*Pennsylvania*: PHILADELPHIA; BUCKS.

22. *Polygonum Convolvulus* L. BLACK BINDWEED. (Man. p. 365; I. F. f. 1348.) In waste or cult. grounds, nearly throughout N. Am. except the extreme north. Nat. from Eu. Native of Asia. *Pennsylvania*: NORTHAMPTON; BUCKS; FRANKLIN; LANCASTER; MONROE; CHESTER; DELAWARE; ALLEGHENY.

23. *Polygonum cilinode* Michx. FRINGED BLACK BINDWEED. (Man. p. 365; I. F. f. 1349.) In rocky places N. S. to Minn. and Pa., south in the Alleghenies to N. C.—*Pennsylvania*: MONROE; NORTHAMPTON; PERRY; LACKAWANNA; TIOGA; ALLEGHENY.

24. *Polygonum scandens* L. CLIMBING FALSE BUCKWHEAT. (Man. p. 365; I. F. f. 1350.) In woods and thickets, N. S. to Ont. and the Rocky Mountains, Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; ERIE; FRANKLIN; LANCASTER; PERRY; LACKAWANNA; CHESTER; DELAWARE; ALLEGHENY.

25. *Polygonum cristatum* Engelm. & Gray. CRESTED FALSE BUCKWHEAT. (Man. p. 366; I. F. f. 1352.) Sandy woods and rocky banks,

N. Y. to Ga., the I. T. and Tex.—*Pennsylvania*: DELAWARE, Castle Rock.

Order 10. CHENOPODIALES.

Fruit a utricle, achene or berry, sometimes an anthocarp, not valvate or merely circumscissile.

Fruit various, not an anthocarp.

Fruit utricular.

Bracts not scarious: stipules wanting.

Stamens inserted at the base of the ovary or in the margin of a short hypanthium. Fam. 1. CHENOPODIACEAE.

Stamens inserted on the margin of a hypanthium which ultimately exceeds the sepals in length. Fam. 2. SCLERANTHACEAE.

Bracts, or stipules when present, scarious.

Stipules wanting: sepals scarious. Fam. 3. AMARANTHACEAE.

Stipules present: sepals herbaceous or scarious-margined.

Fam. 4. ILLECEBRACEAE.

Fruit baccate or an achene, or aggregate. Fam. 5. PHYTOLACCACEAE.

Fruit an anthocarp, the achene surrounded by the calyx-tube.

Fam. 6. NYCTAGINACEAE.

Fruit a capsule dehiscent by apical or longitudinal valves.

Ovary several-celled: corolla wanting. Fam. 7. AIZOACEAE.

Ovary 1-celled: corolla mostly present.

Sepals 2: leaves mostly alternate. Fam. 8. PORTULACACEAE.

Sepals 4 or 5: leaves mostly opposite. Fam. 9. CARYOPHYLLACEAE.

FAMILY I. CHENOPODIACEAE Dumort. GOOSEFOOT FAMILY.

Embryo annular or conduplicate, neither spiral nor coiled: endosperm copious.

Fruit enclosed by the calyx or equalled by the sepals or bractlets.

Flowers perfect or some pistillate: calyx fleshy, herbaceous or membranous.

Mature calyx without a horizontal wing.

Sepals or calyx-lobes longer than the tube.

Calyx herbaceous, slightly fleshy in fruit.

1. CHENOPODIUM.

Calyx very fleshy and bright red in fruit.

2. BLITUM.

Sepals or calyx-lobes shorter than the tube.

Stigmas 3: leaf-blades pinnatifid.

3. ROUBIEVA.

Stigmas 2: leaf-blades entire.

4. KOCHIA.

Mature calyx with a broad horizontal wing.

5. CYCLOLOMA.

Flowers dioecious or monoecious: pistillate flowers without a calyx: fruit enclosed by 2 bractlets.

6. ATRIPLEX.

Fruit much surpassing the calyx.

7. CORISPERMUM.

Embryo spirally coiled: endosperm wanting or scant.

Mature calyx wingless: leaf-blades not spine-tipped.

8. DONDIA.

Mature calyx with a horizontal wing: leaf-blades spine-tipped.

9. SALSOLA.

1. CHENOPODIUM L.

A. Embryo forming a complete ring: plants neither glandular nor aromatic.

a. Seed horizontal.

* Seed and pericarp firmly attached together.

† Flowering branches longer than the accompanying leaves: mature sepals keeled.

Lower surface of the leaf-blades decidedly mealy : inflorescence dense.

1. *C. album*.

Lower surface of the leaf-blades glabrous or glabrate : inflorescence lax.

Panicles leafy-bracted.

2. *C. viride*.

Panicles naked.

3. *C. hybridum*.

†† Flowering branches shorter than the accompanying leaves : mature sepals not keeled.

Leaf-blades relatively narrow, entire.

4. *C. polyspermum*.

Leaf-blades relatively broad, coarsely toothed.

Seeds blunt-edged : leaf-blades of a triangular type.

5. *C. urbicum*.

Seeds sharp-edged : leaf-blades of a rhombic type.

6. *C. murale*.

** Seed and pericarp easily separable from one another.

Foliage and inflorescence pale and copiously mealy, even at maturity.

7. *C. leptophyllum*.

Foliage and inflorescence green and glabrous, at least at maturity.

8. *C. Boscianum*.

b. Seed vertical.

Leaf-blades of an oblong type, sinuate-pinnatifid : seed sharp-edged.

9. *C. glaucum*.

Leaf-blades of a triangular type, entire or nearly so : seed blunt-edged.

10. *C. Bonus-Henricus*.

B. Embryo horseshoe-shaped, forming an incomplete ring : plants glandular and aromatic.

Leaf-blades pinnately lobed.

11. *C. Botrys*.

Leaf-blades entire, undulate or coarsely toothed.

Spikes conspicuously leafy-bracted.

12. *C. ambrosioides*.

Spikes nearly naked or minutely bracted.

13. *C. anthelminticum*.

1. *Chenopodium album* L. LAMB'S QUARTERS. PIGWEED. (Man. p. 369; I. F. f. 1359.) In waste places, throughout N. Am. except the extreme north. Nat. from Eu. Native also of Asia.—*Pennsylvania*: NORTHAMPTON; ERIE; FRANKLIN; CHESTER; LANCASTER; MONROE; DELAWARE; ALLEGHENY.

2. *Chenopodium viride* L. PIGWEED. (Man. p. 369.) Range of the preceding.—*Pennsylvania*: NORTHAMPTON; LANCASTER.

3. *Chenopodium hybridum* L. MAPLE-LEAVED GOOSEFOOT. (Man. p. 370; I. F. f. 1368.) In woods and sometimes in waste places, Quebec to B. C., N. Y., Ky., Kans., Utah and N. Mex.—*Pennsylvania*: NORTHAMPTON; HUNTINGDON; LANCASTER; ERIE; CHESTER.

4. *Chenopodium polyspermum* L. MANY-SEEDED GOOSEFOOT. (Man. p. 370; I. F. f. 1362.) In waste places and on ballast, Mass. to N. J. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA, ballast; BUCKS.

5. *Chenopodium urbicum* L. UPRIGHT OR CITY GOOSEFOOT. (Man. p. 370; I. F. f. 1366.) In waste places, especially in cities, N. S. and Ont. to N. Y. Adv. from Eu.—*Pennsylvania*: ALLEGHENY.

6. *Chenopodium murale* L. NETTLE-LEAVED GOOSEFOOT. (Man. p. 370; I. F. f. 1367.) In waste places, Me. to B. C., to Fla. and Mex.; Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; BUCKS; LANCASTER.

7. *Chenopodium leptophyllum* (Moq.) Nutt. NARROW-LEAVED GOOSEFOOT. (Man. p. 369; I. F. f. 1361.) In dry soil, Man. and the N. W. Terr. to Mo., N. Mex. and Ariz. Also on the shores of L. Erie and on sands of the seashore, Conn. to N. J.—*Pennsylvania*: BUCKS; Bristol.

8. *Chenopodium Boscianum* Moq. BOSC'S GOOSEFOOT. (Man. p. 370; I. F. f. 1363.) In woods and thickets, N. Y. and N. J. to Minn., N. C. and Tex.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; BUCKS; LANCASTER; BERKS.

9. *Chenopodium glaucum* L. OAK-LEAVED GOOSEFOOT. (Man. p. 369; I. F. f. 1360.) In waste places throughout N. Am. except the extreme north. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN; ALLEGHENY.

10. *Chenopodium Bonus-Henricus* L. GOOD KING HENRY. (Man. p. 371; I. F. f. 1370.) In waste places, N. S. and Ont. to Mass. and N. Y. Nat. from Eu.—*Pennsylvania*: ERIE.

11. *Chenopodium Botrys* L. JERUSALEM OAK. (Man. p. 371; I. F. f. 1371.) In waste places, N. S. to Ore., N. Y., Ky. and Mex. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; MONROE; DAUPHIN; CHESTER.

12. *Chenopodium ambrosioides* L. MEXICAN TEA. (Man. p. 371; I. F. f. 1372.) In waste places, Me. and Ont., to Fla., west across the continent to Calif. Nat. from tropical Am.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; PHILADELPHIA; FRANKLIN; CHESTER; DELAWARE; ALLEGHENY.

13. *Chenopodium anthelminticum* L. WORMSEED. (Man. p. 371; I. F. f. 1373.) In waste places, N. Y. and Ont. to Wis., Fla. and Mex. Nat. from Eu.—*Pennsylvania*: LANCASTER; INDIANA; CHESTER; ALLEGHENY.

2. BLITUM L.

1. *Blitum capitatum* L. STRAWBERRY BLITE. (Man. p. 372; I. F. f. 1375.) In dry soil, N. S. to Alaska, N. J., Ill., Minn., in the Rocky Mts. to Col. and Utah, and to Neb.—*Pennsylvania*: NORTHAMPTON; LANCASTER.

3. ROUBIEVA Moq.

1. *Roubieva multifida* (L.) Moq. CUT-LEAVED GOOSEFOOT. (Man. p. 371; I. F. f. 1374.) In waste places and ballast, N. Y. and Va. Nat. or adv. from tropical Am.—*Pennsylvania*: PHILADELPHIA, ballast.

4. KOCHIA Roth.

1. *Kochia scoparia* (L.) Roth. KOCHIA. (Man. p. 374; I. F. f. 1387.) In waste places, Ont., Vt. and N. Y. Adv. from Eu. Native also of Asia.—*Pennsylvania*: ALLEGHENY.

5. **CYCLOLOMA** Moq.

1. *Cycloloma atriplicifolia* (Spreng.) Coulter. **CYCLOLOMA.** (Man. p. 372; I. F. f. 1376.) Along streams and on banks, Man. to the N. W. Terr., Ill., Neb. and Ariz.—*Pennsylvania*: PHILADELPHIA, Fairmount Park.

6. **ATRIPLEX** L.

Plants without scurf or nearly so: leaf-blades narrow or triangular-hastate, slender-petioled.

Leaf-blades lanceolate or linear-lanceolate.

1. *A. patula.*

Leaf-blades triangular-hastate.

2. *A. hastata.*

Plants densely scurfy: leaf-blades rhombic-ovate, short-petioled.

3. *A. rosea.*

1. *Atriplex patula* L. **SPREADING ORACHE.** (Man. p. 373; I. F. f. 1378.) In waste places and ballast, N. S. and Ont. to N. Y. and N. J. Nat. from Eu. Native also of Asia.—*Pennsylvania*: ALLEGHENY; LACKAWANNA, Scranton.

2. *Atriplex hastata* L. **HALBERD-LEAVED ORACHE.** (Man. p. 373; I. F. f. 1379.) In salt meadows and waste places, mostly near the coast, N. B. to S. C., and in saline soil, Man. to B. C., Neb. and Utah. Also in Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; DAUPHIN; ERIE; LEHIGH; DELAWARE; PHILADELPHIA; LUZERNE; ALLEGHENY.

3. *Atriplex rosea* L. **RED ORACHE.** (Man. p. 373; I. F. f. 1380.) In waste places and ballast, N. S. to northern N. Y., Pa. and N. J. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA, chiefly on ballast.

7. **CORISPERMUM** L.

1. *Corispermum hyssopifolium* L. **BUG-SEED.** (Man. p. 375; I. F. f. 1388.) In swampy soil, shores of the Great Lakes to the N. W. Terr., Arctic Am., B. C., Kans., Tex. and Ariz. Also in Eu. and Asia.—*Pennsylvania*: ERIE.

8. **DONDIA** Adans.

1. *Dondia maritima* (L.) Druce. **LOW SEA-BLITE.** (Man. p. 376; I. F. f. 1394.) On sea beaches, stony and muddy shores, Me. to N. Y. and Pa. Also on the coasts of Eu.—*Pennsylvania*: PHILADELPHIA, chiefly on ballast.

9. **SALSOLA** L.

1. *Salsola Kali* L. **SALTWORT.** (Man. p. 377; I. F. f. 1396.) On sea beaches, Cape Breton Id. to Fla. Also in Eu. and Asia.—*Pennsylvania*: PHILADELPHIA, chiefly on ballast.

FAMILY 2. **SCLERANTHACEAE** Lindl. **KNAWEI FAMILY.**1. **SCLERANTHUS** L.

1. *Scleranthus annuus* L. **KNAWEI.** (Man. p. 405; I. F. f. 1524.) In fields, waste places or on dry rocks, Quebec and Ont. to Pa. and Fla. Nat. from Eu.—*Pennsylvania*: PIKE; LUZERNE; NORTHAMPTON; PHILADELPHIA; DELAWARE.

FAMILY 3. **AMARANTACEAE** J. St. Hil. AMARANTH FAMILY.

Stamens with distinct filaments: ovule 1 in each cavity.

Perianth present in all flowers.

1. **AMARANTHUS.**

Perianth wanting in the pistillate flowers.

2. **ACNIDA.**

Stamens with partially united filaments: ovules 2-8 in each cavity.

3. **CELOSIA.**

1. AMARANTHUS L.

Utricle circumscissile.

Flowers, at least the upper ones, in dense terminal spikes.

Stems unarmed, without spines at the leaf-axils.

Spikes strict: sepals mostly obtuse.

1. *A. retroflexus.*

Spikes drooping: sepals mostly acute.

2. *A. hybridus.*

Stems furnished with a pair of spines at each leaf-axil.

3. *A. spinosus.*

Flowers in small axillary clusters usually surpassed by the leaves.

Sepals 4 or 5: stems prostrate: seeds 1.5-2 mm. long.

4. *A. blitoides.*

Sepals 3: stems erect: seeds about 1 mm. long.

5. *A. albus.*

Utricle indehiscent.

Flowers, at least the upper ones, in continuous or interrupted spikes.

6. *A. lividus.*

Flowers in axillary clusters surpassed by the leaves.

7. *A. pumilus.*

1. **Amaranthus retroflexus** L. ROUGH FIGWEED. (Man. p. 378; I. F. f. 1398.) In cult. or waste soil, throughout N. Am. except the extreme north. Also in Eu. Nat. from tropical Am.—*Pennsylvania*: PHILADELPHIA; BUCKS; LANCASTER; ERIE; CHESTER; ALLEGHENY.

2. **Amaranthus hybridus** L. SLENDER FIGWEED. (Man. p. 378; I. F. f. 1399.) In waste grounds, range of the preceding species. Nat. from tropical Am.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; ERIE; LANCASTER; CHESTER; ALLEGHENY.

2a. **A. hybridus paniculatus** (L.) Uline & Bray. (Man. p. 378.)—BUCKS; NORTHAMPTON; PHILADELPHIA; LANCASTER; ERIE; FRANKLIN; ALLEGHENY.

3. **Amaranthus spinosus** L. SPINY AMARANTH. (Man. p. 378; I. F. f. 1400.) In waste and cult. soil, Mass. to Pa., Ohio, Kans., Fla. and Mex. Nat. from tropical Am.—*Pennsylvania*: BUCKS; LANCASTER; DAUPHIN; DELAWARE.

4. **Amaranthus blitoides** S. Wats. PROSTRATE AMARANTH. (Man. p. 378; I. F. f. 1401.) In waste places, especially along the principal routes of travel, Me. to Minn., N. J., Mo. and Kans. Nat. from west of the Rocky Mts.—*Pennsylvania*: PHILADELPHIA, ballast; BUCKS; ALLEGHENY.

5. **Amaranthus albus** L. TUMBLE WEED. (Man. p. 378; I. F. f. 1402.) In waste or cult. soil throughout N. Am. Nat. from tropical Am.—*Pennsylvania*: NORTHAMPTON; CHESTER; DELAWARE.

6. **Amaranthus lividus** L. PURPLISH AMARANTH. (Man. p. 379; I. F. f. 1405.) In waste places, Mass. to N. Y. Adv. from tropical Am.—*Pennsylvania*: PHILADELPHIA, chiefly on ballast.

7. *Amaranthus pumilus* Raf. COAST AMARANTH. (Man. p. 379; I. F. f. 1408.) On sea beaches, R. I. to N. C. *Pennsylvania*: PHILADELPHIA, chiefly on ballast.

2. ACNIDA L.

1. *Acnida cannabina* L. SALT-MARSH WATER-HEMP. (Man. p. 380; I. F. f. 1409.) In salt and brackish marshes and up the rivers to fresh water, Mass. to Fla.—*Pennsylvania*: PHILADELPHIA; DELAWARE; BUCKS, Riverton.

3. CELOSIA L.

1. *Celosia argentea* L. Common to all tropical regions, introduced into temperate countries. — *Pennsylvania*: MONTGOMERY, Norristown.

FAMILY 4. ILLECEBRACEAE Lindl. KNOTWORT FAMILY.

1. ANYCHIA Michx.

Sepals ovate: utricle nearly as long as the calyx: foliage pubescent.

1. *A. dichotoma*.

Sepals oblong: utricle surpassing the calyx: foliage glabrate.

2. *A. Canadensis*.

1. *Anychia dichotoma* Michx. FORKED CHICKWEED. (Man. p. 405; I. F. f. 1522.) In dry woods and open places, Me. to Minn., Fla., Ala. and Ark.—*Pennsylvania*: MONTGOMERY, Harrison; NORTHAMPTON; BERKS; MONTGOMERY; LANCASTER; FRANKLIN; BEDFORD; ALLEGHENY.

2. *Anychia Canadensis* (L.) B. S. P. SLENDER FORKED CHICKWEED. (Man. p. 405; I. F. f. 1523.) In dry woods, Ont. to Mass. and Ga., Minn. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; FRANKLIN; LANCASTER; ALLEGHENY.

FAMILY 5. PHYTOLACCACEAE Lindl. POKEWEED FAMILY.

1. PHYTOLACCA L.

1. *Phytolacca decandra* L. POKE. SCOKE. PIGEON-BERRY. GAR-GET. (Man. p. 381; I. F. f. 1415.) In various situations, Me. to Minn., Fla. and Tex. Nat. in Eu.—*Pennsylvania*: NORTHAMPTON; HUNTINGDON; ERIE; FRANKLIN; CHESTER; LANCASTER; LACKAWANNA; ALLEGHENY.

FAMILY 6. NYCTAGINACEAE Lindl. FOUR O'CLOCK FAMILY.

1. ALLIONIA Loeft.

Leaf-blades triangular-ovate, the lower ones cordate at the base.

1. *A. nyctaginea*.

Leaf-blades linear.

2. *A. albida*.

1. *Allionia nyctaginea* Michx. HEART-LEAVED UMBRELLA-WORT. (Man. p. 382; I. F. f. 1416.) In dry soil, Minn. to the N. W. Terr., Pa., La., Tex. and N. Mex.—*Pennsylvania*: PHILADELPHIA; WAYNE.

2. *Allionia albida* Walt. PALE UMBRELLA-WORT. (Man. p. 382; I. F. f. 1417.) In dry soil, S. C. and Georgia, and adventive northward. —*Pennsylvania*: BUCKS, Bristol.

FAMILY 7. **AIZOACEAE** A. Br. CARPET-WEED FAMILY.1. **MOLLUGO** L.

1. *Mollugo verticillata* L. CARPET-WEED. (Man. p. 384; I. F. f. 1425.) In waste places and cult. grounds, N. B. to Minn., Fla., Tex. and Mex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; LYCOMING; COLUMBIA; FRANKLIN; ALLEGHENY; CHESTER; DELAWARE.

FAMILY 8. **PORTULACACEAE** Reichenb. PURSLANE FAMILY.

Ovary and capsule superior: capsule 3-valved.

Sepals deciduous: stamens more numerous than the sepals or petals: capsules many-seeded.

1. **TALINUM**.

Sepals persistent: stamens as many as the sepals or petals: capsules few-seeded.

2. **CLAYTONIA**.

Ovary and capsule wholly or partly inferior: capsule circumscissile.

3. **PORTULACA**.

1. **TALINUM** Adans.

1. *Talinum teretifolium* Pursh. FAME-FLOWER. (Man. p. 385; I. F. f. 1426.) On dry rocks, Pa. to Ga. and Tex.—*Pennsylvania*: CHESTER; LANCASTER; DELAWARE.

2. **CLAYTONIA** L.

Leaves of a linear type, mostly over 7 cm. long.

1. *C. Virginica*.

Leaves of an elliptic or oblong type, mostly less than 7 cm. long.

2. *C. Caroliniana*.

1. *Claytonia Virginica* L. SPRING BEAUTY. (Man. p. 385; I. F. f. 1429.) In moist woods, N. S. to the N. W. Terr., Ga. and Tex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; YORK; FRANKLIN; HUNTINGDON; CHESTER; DELAWARE; ALLEGHENY.

2. *Claytonia Caroliniana* Michx. CAROLINA SPRING BEAUTY. (Man. p. 385; I. F. f. 1430.) In damp woods, N. S. to the N. W. Terr., N. C. along the Alleghenies, and to Ohio and Mo.—*Pennsylvania*: WYOMING; BLAIR; LUZERNE; CLARION; ARMSTRONG; ALLEGHENY.

3. **PORTULACA** L.

Leaf-blades flat: corolla 0.5-1 cm. broad.

1. *P. oleracea*.

Leaf-blades terete: corolla 2.5-5 cm. broad.

2. *P. grandiflora*.

1. *Portulaca oleracea* L. PURSLANE. PUSSLEY. (Man. p. 386; I. F. f. 1434.) In fields and waste places, northeastern U. S. and in warm and tropical Am.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Portulaca grandiflora* Hook. GARDEN PORTULACA. SUN-PLANT. (Man. p. 387; I. F. f. 1437.) In waste places and on roadsides. Introd. from S. Am.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; DAUPHIN; ALLEGHENY.

FAMILY 9. CARYOPHYLLACEAE Reichenb. PINK FAMILY.

Sepals united: ovary stipitate: petals clawed.

Calyx-tube with at least twice as many ribs as lobes.

Styles 5.

Calyx-lobes foliaceous, alternate with the styles.

1. AGROSTEMMA.

Calyx-lobes small, opposite to the styles.

2. LYCHNIS.

Styles 3 or rarely 4.

3. SILENE.

Calyx with 5 ribs, nerved or nerveless.

Petals appendaged at the base of the blade.

4. SAPONARIA.

Petals unappendaged.

Calyx-tube 5-angled, without bractlets.

5. VACCARIA.

Calyx-tube terete or nearly so, subtended by bractlets.

6. DIANTHUS.

Sepals distinct: ovary sessile: petals not clawed.

Stipules wanting.

Petals 2-cleft or 2-parted.

Capsules relatively short, ovoid or oblong.

7. ALSINE.

Capsules relatively long, cylindric.

8. CERASTIUM.

Petals entire, toothed or slightly notched.

Styles as many as the sepals.

9. SAGINA.

Styles fewer than the sepals.

Petals entire or emarginate: flowers in dichotomous or capitate cymes, or solitary.

Seeds not strophiolate.

10. ARENARIA.

Seeds strophiolate.

11. MOEHRINGIA.

Petals toothed, flowers in umbel-like cymes.

12. HOLOSTEUM.

Stipules present.

Leaves whorled: styles and valves of the capsule 5.

13. SPERGULA.

Leaves opposite: styles and valves of the capsule 3.

14. TISSA.

1. AGROSTEMMA L.

1. Agrostemma Githago L. CORN COCKLE OR CAMPION. (Man. p. 388; I. F. f. 1438.) In grain fields and waste places, throughout northeastern U. S. Adv. from Eu., occurring also in northern Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHES-
TER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; DELAWARE;
ALLEGHENY.

2. LYCHNIS L.

Calyx-lobes not twisted: plants more or less pubescent or glandular, not woolly.

Mature calyx much enlarged or inflated.

Flowers opening in the evening: corolla white or pink. 1. *L. alba*.

Flowers opening in the morning: corolla red. 2. *L. dioica*.

Mature calyx campanulate.

3. *L. Flos-cuculi*.

Calyx-lobes twisted: plants densely white-woolly.

4. *L. Coronaria*.

1. Lychnis alba L. EVENING LYCHNIS. (Man. p. 392; I. F. f. 1455.) In waste places and on ballast, Ont. and in the Eastern and Middle States. Adv. or Nat. from Eu.—*Pennsylvania*: LUZERNE;
MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA.

2. *Lychnis dioica* L. RED CAMPION. (Man. p. 392; I. F. f. 1456.) In waste places and on ballast. N. S., Ont., New Eng. and the Middle States. Adv. from Eu.—*Pennsylvania*: LANCASTER, Safe Harbor.

3. *Lychnis Flos-cuculi* L. CUCKOO FLOWER. RAGGED ROBIN. (Man. p. 392; I. F. f. 1458.) In moist waste places, N. B. to N. J. and Pa. Native of Eu.—*Pennsylvania*: PHILADELPHIA, on or near ballast, also in waste places about the larger cities.

4. *Lychnis Coronaria* (L.) Desr. MULLEIN PINK. (Man. p. 392; I. F. f. 1462.) Roadsides and waste places, Mass. to Pa. Native of Eu.—*Pennsylvania*: BUCKS, Carversville; ALLEGHENY.

3. *SILENE* L.

Leaves, at least most of them, in whorls of 4.

1. *S. stellata*.

Leaves merely opposite.

Calyx inflated.

Flowers few, leafy-bracted.

2. *S. alba*.

Flowers numerous, not leafy-bracted.

3. *S. vulgaris*.

Calyx merely filled by the mature capsule.

Inflorescence cymose or paniculate.

Plants day-blooming: corolla pink or red.

Perennials: plants more or less clammy-pubescent.

Corollas crimson: petals cleft.

4. *S. Virginica*.

Corollas pink: petals emarginate.

5. *S. Caroliniana*.

Annuals: plants with stems glutinous at or about the nodes.

Mature calyx ovoid: inflorescence paniculate.

6. *S. antirrhina*.

Mature calyx clavate: inflorescence cymose.

7. *S. Armeria*.

Plants night-blooming: corolla white.

8. *S. noctiflora*.

Inflorescence racemose.

9. *S. Anglica*.

1. *Silene stellata* (L.) Ait. STARRY CAMPION. (Man. p. 389; I. F. f. 1441.) In woods, R. I. to Minn., S. C. and Ark.—*Pennsylvania*: LUTZERNE; NORTHAMPTON; BUCKS; LANCASTER; FRANKLIN; CHESTER; DELAWARE; ALLEGHENY.

2. *Silene alba* Muhl. WESTERN WHITE CAMPION. (Man. p. 389; I. F. f. 1442.) In shaded or moist places, Pa. to Minn. and Iowa.—*Pennsylvania*: LANCASTER; WASHINGTON; ALLEGHENY; ARMSTRONG.

3. *Silene vulgaris* (Moench.) Garcke. BLADDER CAMPION. (Man. p. 389; I. F. f. 1443.) In meadows and waste places, N. B. to Ont., N. J. and Ill. Nat. from Eu. and nat. also of Asia.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; ALLEGHENY.

4. *Silene Virginica* L. FIRE PINK. (Man. p. 390; I. F. f. 1445.) In dry woods, N. J. to Ont., Minn., Ga. and Mo.—*Pennsylvania*: CLARION; VENANGO; ARMSTRONG; ALLEGHENY; WESTMORELAND.

5. *Silene Caroliniana* Walt. WILD PINK. (Man. p. 390; I. F. f. 1448.)—In dry or rocky soil, Me. to Ga. central N. Y., Pa. and Ky.—*Pennsylvania*: NORTHAMPTON; YORK; LANCASTER; FRANKLIN; COLUMBIA; HUNTINGDON; ALLEGHENY.

6. *Silene antirrhina* L. SLEEPY CATCHFLY. (Man. p. 390; I. F. f. 1449.) In waste places and woods, New Eng. to B. C., Fla. and Mex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

7. *Silene Armeria* L. SWEET WILLIAM CATCHFLY. (Man. p. 390; I. F. f. 1450.) In waste places and spontaneous, N. B. to Mich., N. J. and Pa. Introd. from Eu.—*Pennsylvania*: NORTHAMPTON; LANCASTER; ALLEGHENY.

8. *Silene noctiflora* L. NIGHT-FLOWERING CATCHFLY. (Man. p. 391; I. F. f. 1451.) In waste places, N. S. and N. B. to Man., Fla. and Mo. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; BERKS; WASHINGTON; ALLEGHENY.

9. *Silene Anglica* L. ENGLISH CATCHFLY. (Man. p. 391; I. F. f. 1452.) In waste places, Me. to Ont., N. Y. and Pa.—*Pennsylvania*: NORTHAMPTON.

4. SAPONARIA L.

1. *Saponaria officinalis* L. SOAPWORT. BOUNCING BET. (Man. p. 393; I. F. f. 1466.) Roadsides and waste places. Nat. from Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; SCHUYLKILL; BUCKS; CHESTER; LANCASTER; DELAWARE; DAUPHIN; FRANKLIN; HUNTINGDON; BEDFORD; ALLEGHENY.

5. VACCARIA Medic.

1. *Vaccaria Vaccaria* (L.) Britton. COW-HERB. (Man. p. 394; I. F. f. 1467.) In waste places, Ont. to B. C., Fla. and La. Also in the Rocky Mt. region. Nat. or adv. from Eu.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; FRANKLIN; CRAWFORD.

6. DIANTHUS L.

Annual species.

Bracts with broad scarious blades.

1. *D. prolifer.*

Bracts with narrow long-tipped herbaceous blades.

2. *D. Armeria.*

Perennial species.

3. *D. barbatus.*

1. *Dianthus prolifer* L. PROLIFEROUS PINK. (Man. p. 394; I. F. f. 1468.) In waste places and on ballast, Staten Island, N. Y., N. J. and eastern Pa. Fugitive from Eu.—*Pennsylvania*: PHILADELPHIA.

2. *Dianthus Armeria* L. DEPTFORD PINK. (Man. p. 394; I. F. f. 1469.) In fields and on roadsides, Ont. and Me. to Md., Mich. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; MONROE; BUCKS; PHILADELPHIA; DELAWARE; HUNTINGDON; ALLEGHENY; SOMERSET.

3. *Dianthus barbatus* L. SWEET WILLIAM. BUNCH PINK. (Man. p. 394; I. F. f. 1471.) In waste places in the Eastern and Middle States. Introd. from Eu.—*Pennsylvania*: BUCKS; ALLEGHENY.

7. ALSINE L.

Styles 5.

1. *A. aquatica*.

Styles 3 or rarely 4.

Leaf-blades relatively broad.

Plants with glabrous foliage, or with a few scattered hairs.

2. *A. uliginosa*.

Plants more or less pubescent, the stems with 2 pubescent lines, the petioles often ciliate.

Sepals 3-4 mm. long: petals shorter than the sepals. 3. *A. media*.

Sepals 5-7 mm. long: petals longer than the sepals. 4. *A. pubera*.

Leaf-blades relatively narrow.

Cyme with small scarious bracts.

Petals parted: capsules about twice as long as the sepals: seeds smooth.

5. *A. longifolia*.

Petals cleft: capsules somewhat longer than the sepals: seeds rough.

6. *A. graminea*.

Cymes with foliaceous bracts.

7. *A. borealis*.

1. *Alsine aquatica* (L.) Britton. WATER MOUSE-EAR CHICKWEED. (Man. p. 395; I. F. f. 1472.) In wet and waste places, Ont. to Pa., Also in B. C. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA, Fairmount Park.

2. *Alsine uliginosa* (Murr.) Britton. BOG STARWORT. MARSH CHICKWEED. (Man. p. 395; I. F. f. 1474.) In cold brooks and springs, N. B. to Md. Also in B. C. and the N. W., Terr., Eu. and Asia.—*Pennsylvania*: SUSQUEHANNA; WAYNE; MONROE; LUZERNE; NORTHAMPTON; BUCKS; DELAWARE; MONTGOMERY; PHILADELPHIA; CHESTER; LANCASTER; COLUMBIA; MCKEAN.

3. *Alsine media* L. COMMON CHICKWEED. (Man. p. 395; I. F. f. 1475.) In waste places, meadows and woods, throughout N. Am. Nat. from Eu. Native also of Asia.—*Pennsylvania*: MONROE; NORTHAMPTON; COLUMBIA; LANCASTER; CHESTER; DELAWARE; ALLEGHENY.

4. *Alsine pubera* (Michx.) Britton. GREAT CHICKWEED. (Man. p. 395; I. F. f. 1476.) In moist, rocky places, N. J. and Pa. to Ind., Ky., Ga. and Ala.—*Pennsylvania*: MONTGOMERY; PHILADELPHIA; CHESTER; LANCASTER; YORK; DELAWARE; FAYETTE; ALLEGHENY.

5. *Alsine longifolia* (Muhl.) Britton. LONG-LEAVED STITCHWORT. (Man. p. 396; I. F. f. 1478.) In low meadows and swamps, N. S. to Alaska, Ky., and La., and in the Rocky Mountain region, B. C., northern Eu. and Asia.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; BERKS; CHESTER; DELAWARE; LANCASTER; FRANKLIN; TIOGA; CLEARFIELD; ARMSTRONG; SOMERSET; ALLEGHENY.

6. *Alsine graminea* (L.) Britton. LESSER STITCHWORT OR STARWORT. (Man. p. 396; I. F. f. 1479.) In fields and on roadsides, N. S., Quebec, Ont., N. Eng. and the Middle States. Native of Eu. and Asia.—*Pennsylvania*: SUSQUEHANNA; MONROE; MONTGOMERY.

7. *Alsine borealis* (Bigel.) Britton. NORTHERN STITCHWORT. (Man. p. 396; I. F. f. 1482.) In wet places, R. I. to N. J., Minn. and B. C., and in the Rocky Mts. to Colo. Also in northern Eu. and Asia.—*Pennsylvania*: WAYNE; MONROE; MONTGOMERY.

8. CERASTIUM L.

Petals shorter than the sepals or about equalling them in length.

Pedicels shorter than the sepals at maturity. 1. *C. viscosum*.

Pedicels longer than the sepals at maturity.

Leaf-blades less than 4 mm. long : sepals 3-3.5 mm. long : capsules 5-7 mm. long. 2. *C. semidecandrum*.

Leaf-blades over 4 mm. long : sepals 5-6 mm. long : capsules 7-10 mm. long.

3. *C. vulgatum*.

Petals manifestly longer than the sepals.

Annual : foliage viscid : corollas 6-12 mm. broad. 4. *C. longipedunculatum*.

Perennial : foliage glabrous or pubescent : corollas 17-21 mm. broad.

5. *C. arvense*.

1. *Cerastium viscosum* L. MOUSE-EAR CHICKWEED. (Man. p. 397 ; I. F. f. 1484.) In waste places and meadows, N. B. to Ont., Fla. and Mex. Nat. from Eu., also in W. I., C. Am. and on the Pacific Coast.—*Pennsylvania* : LANCASTER ; CHESTER ; DELAWARE.

2. *Cerastium semidecandrum* L. SMALL MOUSE-EAR CHICKWEED. (Man. p. 397 ; I. F. f. 1485.) In dry, sterile soil, N. J. and Pa. to Va. Nat. from Eu.—*Pennsylvania* : LANCASTER.

3. *Cerastium vulgatum* L. LARGER MOUSE-EAR CHICKWEED. (Man. p. 397 ; I. F. f. 1486.) In fields and woods, almost throughout North America. Mostly nat. from Eu. Native of Asia. — *Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; LUZERNE ; FRANKLIN.

4. *Cerastium longipedunculatum* Muhl. NODDING CHICKWEED. (Man. p. 397 ; I. F. f. 1487.) In moist, shaded places, N. S. and Hudson Bay to N. C., B. C., Nev. and Mex. — *Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER.

5. *Cerastium arvense* L. FIELD CHICKWEED. (Man. p. 398 ; I. F. f. 1489.) In dry, rocky places, Lab. to Alaska, Ga., Mo., Nev. and Calif. Also in Eu. and Asia. — *Pennsylvania* : NORTHAMPTON ; BUCKS ; PHILADELPHIA ; CHESTER ; LANCASTER ; FRANKLIN ; HUNTINGDON ; LYCOMING ; DELAWARE ; YORK.

5a. *C. arvense oblongifolium* (Torr.) Hollick & Britton. (Man. p. 398.) DELAWARE ; LANCASTER ; DAUPHIN ; PERRY.

5b. *C. arvense velutinum* (Raf.) Britton. (Man. p. 398.) CHESTER ; LANCASTER.

9. SAGINA L.

Sepals and petals mostly 4 : petals much shorter than the sepals or wanting.

Stems and branches depressed-spreading : petals present. 1. *S. procumbens*.

Stems and branches erect : petals obsolete or wanting. 2. *S. apetala*.

Sepals and petals mostly 5 : petals as long as the sepals or nearly so.

3. *S. decumbens*.

1. *Sagina procumbens* L. PROCUMBENT PEARLWORT. (Man. p. 399 ; I. F. f. 1494.) In moist places, Newf. and Greenland to Mich., Pa. and N. J. Native of Eu. and Asia. — *Pennsylvania* : NORTHAMPTON, streets of Bath ; PHILADELPHIA.

2. *Sagina apetala* Ard. SMALL-FLOWERED PEARLWORT. (Man. p. 399; I. F. f. 1495.) In dry soil in woods and fields, Mass. to N. J. and Pa. Native of Eu.—*Pennsylvania*: LANCASTER; BUCKS.

3. *Sagina decumbens* (Ell.) T. & G. DECUMBENT PEARLWORT. (Man. p. 399; I. F. f. 1496.) In dry soil, eastern Mass. to Ill., south to Fla., Mo. and La.—*Pennsylvania*: PHILADELPHIA.

10. ARENARIA L.

Capsule opening by twice as many valves as there are styles.

1. *A. serpyllifolia*.

Capsule opening by as many valves as there are styles.

Sepals acuminate: leaves rigid, subulate.

2. *A. Michauxii*.

Sepals obtuse: leaves herbaceous or fleshy.

3. *A. Groenlandica*.

1. *Arenaria serpyllifolia* L. THYME-LEAVED SANDWORT. (Man. p. 400; I. F. f. 1499.) In dry or rocky places, throughout eastern N. Am., extending across the continent. Nat. from Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; COLUMBIA; ALLEGHENY.

2. *Arenaria Michauxii* (Fenzl.) Hook. f. ROCK SANDWORT. (Man. p. 401; I. F. f. 1506.) In dry, rocky places, Ont. and Vt. to Va., west to Wis. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; CHESTER; LANCASTER.

3. *Arenaria Groenlandica* (Retz.) Spreng. MOUNTAIN SANDWORT OR STARWORT. (Man. p. 401; I. F. f. 1509.) On dry rocks, Lab. and Greenland to N. Y., Conn., the mountains of southern N. Y. and Pa., and on the higher Alleghanies of Va. and N. C.—*Pennsylvania*: MONROE.

11. MOEHRINGIA L.

1. *Moehringia lateriflora* (L.) Fenzl. BLUNT-LEAVED SANDWORT. (Man. p. 402; I. F. f. 1510.) In moist places, N. S. to Alaska, N. Y. and N. J. to Mo., extending to the Rocky Mts. of Utah. Also in Ore. and B. C. and Eu. and Asia.—*Pennsylvania*: MONROE; SUSQUEHANNA; TIoga; LANCASTER; BLAIR; ERIE, Presque Isle; SOMERSET; CHESTER; ALLEGHENY.

12. HOLOSTEUM L.

1. *Holosteum umbellatum* L. JAGGED CHICKWEED. (Man. p. 398; I. F. f. 1492.) Fields, roadsides and waste places, Pa., Del. and Ga. Native of Eu. and Asia.—*Pennsylvania*: LANCASTER.

13. SPERGULA L.

1. *Spergula arvensis* L. CORN SPURRY. (Man. p. 402; I. F. f. 1513.) In fields and waste places, eastern Canada and the Eastern and Middle States. Adv. or nat. from Eu.—*Pennsylvania*: WAYNE; MONTGOMERY; PHILADELPHIA.

14. TISSA Adans.

1. *Tissa rubra* (L.) Britton. SAND SPURRY. (Man. p. 403; I. F. f. 1516.) In waste places and along roadsides, or sometimes maritime, N.

S. to Pa. and Va. Also introd. in Calif. and Oregon. Adv. from Eu. Native of Asia.—*Pennsylvania* : PHILADELPHIA ; LANCASTER ; ADAMS ; DAUPHIN ; COLUMBIA.

Order 11. RANALES.

Water plants : emersed or floating leaves with peltate blades or a basal sinus.

Gynoeceum of 3 or more carpels : corolla present : plants with emersed or floating leaves. Fam. 1. NYMPHAEACEAE.

Gynoeceum of a single carpel : corolla wanting : plants with only submerged leaves. Fam. 2. CERATOPHYLLACEAE.

Land plants, except some RANUNCULACEAE.

Anther-sacs opening by slits.

Hypanthium small or obsolete, at least not hollow.

Flowers perfect or monoecious, if dioecious, the plants neither vines nor herbs with compound leaves.

Carpels more or less coherent or united into a cone-like structure.

Fam. 3. MAGNOLIACEAE.

Carpels solitary or several, distinct, at least at maturity.

Sepals 3 : petals 6 : fruit pulpy : endosperm channeled.

Fam. 4. ANONACEAE.

Sepals 3-15 : petals about as many ; plants, if shrubby, not with a pulpy fruit : endosperm even. Fam. 5. RANUNCULACEAE.

Flowers dioecious : vines with simple leaves.

Fam. 6. MENISPERMACEAE.

Hypanthium hollow, enclosing the numerous carpels.

Fam. 7. CALYCANTHACEAE.

Anther-sacs opening by hinged valves, except in *Podophyllum*.

Corolla present : hypanthium wanting. Fam. 8. BERBERIDACEAE.

Corolla wanting : hypanthium present. Fam. 9. LAURACEAE.

FAMILY I. NYMPHAEACEAE DC. WATER LILY FAMILY.

Carpels several and distinct from each other.

Carpels not in a fleshy receptacle : sepals and petals 3 or 4 each : stamens 12-18. 1. BRASENIA.

Carpels immersed in a fleshy receptacle : sepals and petals numerous : stamens indefinite. 2. NELUMBO.

Carpels united into a compound pistil.

Petals small, filament-like : stamens hyogynous. 3. NYMPHAEA.

Petals as large as the sepals : stamens epigynous. 4. CASTALIA.

1. BRASENIA Schreb.

1. *Brasenia peltata* (Michx.) Casp. WATER-SHIELD OR TARGET. (Man. p. 406 ; I. F. f. 1526.) In ponds and slow streams, N. S. to Fla., Man. and Tex.—*Pennsylvania* : PIKE ; MONROE ; NORTHAMPTON ; BUCKS ; CHESTER ; LANCASTER ; FRANKLIN ; HUNTINGDON ; CAMBRIA, Williamsville ; DELAWARE.

2. NELUMBO Adans.

1. *Nelumbo lutea* (Willd.) Pers. AMERICAN LOTUS. (Man. p. 408 ; I. F. f. 1534.) Shores of Lake Ontario to Mich., Conn., Fla., I. Terr. and La.—*Pennsylvania* : PHILADELPHIA ; DELAWARE, Marcus Hook.

3. NYMPHAEA L.

Stigmatic lines 12-24.

1. *N. advena*.

Stigmatic lines 7-12.

Petals fleshy: stigmatic lines mostly 9-12: flowers mostly over 3 cm. thick.

2. *N. hybrida*.

Petals thin: stigmatic lines mostly 7-9: flowers mostly less than 3 cm. thick.

3. *N. Kalmiana*.

1. *Nymphaea advena* Soland. LARGE YELLOW POND LILY. (Man. p. 407; I. F. f. 1527.) In ponds and slow streams, N. B. and N. S. to the Rocky Mts., Fla., Tex. and Utah.—*Pennsylvania*: LACKAWANNA; MONROE; CARBON; LUZERNE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; DELAWARE.

2. *Nymphaea hybrida* Peck. RED-DISKED POND LILY. (Man. p. 407; I. F. f. 1528.) In ponds and slow streams, Lake Champlain, Ont. to Pa. and Mich.—*Pennsylvania*: PIKE, Silver Lake; MONROE, Naomi Pines.

3. *Nymphaea Kalmiana* (Michx.) Sims. SMALL YELLOW POND LILY. (Man. p. 407; I. F. f. 1529.) In ponds and slow streams, Newf. to Saskatchewan, Pa. and Minn.—*Pennsylvania*: MONROE, Tunkhannock; LANCASTER, Collin's Ferry.

4. CASTALIA Salisb.

Rootstocks not tuber-bearing: seeds oblong, 3 mm. long, stipitate, shorter than the aril: flowers fragrant.

1. *C. odorata*.

Rootstocks tuber-bearing: seeds globular, 6 mm. long, not stipitate, larger than the aril: flowers odorless.

2. *C. tuberosa*.

1. *Castalia odorata* (Dryand) Woodr. & Wood. POND LILY. WATER NYMPH. (Man. p. 407; I. F. f. 1531.) In ponds and slow streams, N. S. to Man., Fla. and La.—*Pennsylvania*: WAYNE; PIKE; MONROE; NORTHAMPTON; BUCKS; LUZERNE; CARBON; LANCASTER; CHESTER; DAUPHIN; ERIE.

2. *Castalia tuberosa* (Paine) Greene. TUBEROUS WHITE WATER LILY. (Man. p. 407; I. F. f. 1532.) In ponds and streams, N. Y. to Mich., N. J., Pa. and eastern Neb.—*Pennsylvania*: CRAWFORD, Conneant Lake.

FAMILY 2. **CERATOPHYLLACEAE** A. Gray. HORNWORT FAMILY.**1. CERATOPHYLLUM L.**

1. *Ceratophyllum demersum* L. HORNWORT. (Man. p. 409; I. F. f. 1536.) In ponds and slow streams, throughout N. Am. except the extreme north.—*Pennsylvania*: WAYNE; NORTHAMPTON; DAUPHIN; HUNTINGDON; LANCASTER; ERIE; CHESTER; DELAWARE.

FAMILY 3. **MAGNOLIACEAE** J. St. Hil. MAGNOLIA FAMILY.

Mature carpels dehiscent: leaf-blades not lobed.

1. **MAGNOLIA**.

Mature carpels samara-like, indehiscent: leaf-blades 4-lobed.

2. **LIRIODENDRON**.

1. **MAGNOLIA** L.

Corolla white : styles or stigmas stout, persistent : follicles tapering.

Leaf-blades elliptic-oblancoate or obovate-lanceolate, 2-6 dm. long, membranous : fruit 1-1.5 dm. long. 1. *M. tripetala*.

Leaf-blades oblong, elliptic or oval, rarely broadest below the middle, 5-15 cm. long, firm : fruit 3-5 cm. long. 2. *M. Virginiana*.

Corolla greenish or yellow : styles or stigmas slender, deciduous : follicles rounded. 3. *M. acuminata*.

1. **Magnolia tripetala** L. UMBRELLA-TREE. (Man. p. 409 ; I. F. f. 1539.) In woods, Pa. to Ga., Ark. and Miss.—*Pennsylvania* : LANCASTER ; YORK.

2. **Magnolia Virginiana** L. LAUREL MAGNOLIA. SWEET BAY. (Man. p. 409 ; I. F. f. 1540.) In swamps, eastern Mass. and southward, mainly east of the Alleghenies to Fla., west through the Gulf States to Ark. and Tex.—*Pennsylvania* : BUCKS ; MONTGOMERY ; CHESTER ; LANCASTER ; LEBANON ; CUMBERLAND ; ADAMS ; FRANKLIN ; DELAWARE.

3. **Magnolia acuminata** L. CUCUMBER TREE. (Man. p. 410 ; I. F. f. 1541.) In woods, N. Y. to Ill., N. C. and Ark.—*Pennsylvania* : FRANKLIN ; HUNTINGDON ; LANCASTER ; CENTRE ; CLINTON ; TIOGA ; WASHINGTON ; SOMERSET ; ALLEGHENY.

2. **LIRIODENDRON** L.

1. **Liriodendron Tulipifera** L. TULIP-TREE. (Man. p. 410 ; I. F. f. 1542.) In woods, Vt. to Mich., R. I., Fla., Ark.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; CHESTER ; LANCASTER ; MONROE ; HUNTINGDON ; BEDFORD ; DELAWARE ; ALLEGHENY.

FAMILY 4. **ANONACEAE** DC. CUSTARD-APPLE FAMILY.

1. **ASIMINA** Adans.

1. **Asimina triloba** (L.) Dunal. PAPAW. (Man. p. 410 ; I. F. f. 1543.) Along streams, Ont. to Mich., N. J., Pa. to Fla. and Tex.—*Pennsylvania* : MONTGOMERY ; LANCASTER ; YORK ; DAUPHIN ; FRANKLIN ; HUNTINGDON, at 1,100 ft. ; FAYETTE ; ALLEGHENY ; CHESTER ; DELAWARE.

FAMILY 5. **RANUNCULACEAE** Juss. CROWFOOT FAMILY.

A. Fruit a follicle or a berry : carpels with several ovules or with only 1 or 2 ovules in genera Nos. 1 and 6.

a. Flowers regular.

* Leaf-blades palmately nerved or palmately compound.

Petals wanting.

Carpels ripening into a head of red berries.

1. HYDRASTIS.

Carpels ripening into a head of dry follicles.

2. CALTHA.

Petals present.

Petals flat, linear.

3. TROLLIUS.

Petals tubular, at least near the base.

Plants caulescent : sepals persistent.

4. HELLEBORUS.

Plants scapose : sepals deciduous.

5. CAMMARUM.

** Leaf-blades pinnately or ternately compound or decompound.

Petals without spurs or wanting.

Fruit dry follicles.

Shrubs.

6. XANTHORRHIZA.

Herbs.

Low herbs, with solitary or few loosely paniced flowers.

7. COPTIS.

Tall herbs, with numerous flowers in strict, simple or branched racemes.

8. CIMICIFUGA.

Fruit berry-like follicles.

9. ACTAEA.

Petals prolonged backward into hollow spurs.

10. AQUILEGIA.

b. Flowers irregular.

Posterior sepal prolonged into a spur.

11. DELPHINIUM.

Posterior sepal more or less helmet-like.

12. ACONITUM.

B. Fruit an achene : carpels with a single ovule each.

Flowers, or their pedicels or peduncles, subtended by involucre.

Involucre close under the calyx ; bracts entire.

13. HEPATICA.

Involucre remote from the calyx ; bracts toothed, divided or compound.

Styles subulate : leaf-segments sessile.

14. ANEMONE.

Styles wanting : leaflets stalked.

15. SYNDESMON.

Flowers not subtended by involucre.

Leaves opposite : sepals petal-like.

Petals wanting.

16. CLEMATIS.

Petals present, smaller than the sepals.

17. ATRAGENE.

Leaves alternate, sometimes all basal.

Leaf-blades entire, toothed, palmately lobed or dissected.

Petals wanting.

18. TRAUTVETTERIA.

Petals present.

Achenes transversely wrinkled : petals white.

19. BATRACHIUM.

Achenes not transversely wrinkled : petals yellow, at least without.

Achenes longitudinally ribbed.

20. HALERPESTES.

Achenes smooth, papillose or spiny.

Achenes truncate at the apex : sepals mostly 3.

21. FICARIA.

Achenes beaked or beakless, but not truncate : sepals mostly 5.

22. RANUNCULUS.

Leaf-blades ternately decompound.

23. THALICTRUM.

1. HYDRASTIS Ellis.

1. Hydrastis Canadensis L. GOLDEN SEAL. ORANGE-ROOT. (Man. p. 412 ; I. F. f. 1544.) In woods, Ont. to N. Y., Minn., Ga. and Mo.—*Pennsylvania* : BUCKS ; PHILADELPHIA ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; HUNTINGDON ; ALLEGHENY.

2. CALTHA L.

Calyx mostly over 2.5 cm. broad : leaf-blades cordate, the sinus usually narrow.

1. *C. palustris*.

Calyx mostly less than 2.5 cm. broad : leaf-blades flabelliform, the sinus broad.

2. *C. flabellifolia*.

1. *Caltha palustris* L. MARSH-MARIGOLD. (Man. p. 412; I. F. f. 1545.) In swamps and meadows, Newf. to the Rocky Mt. region, S. C., and Iowa.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; LEBANON; FRANKLIN; ERIE; ALLEGHENY.

2. *Caltha flabellifolia* Pursh. MOUNTAIN MARSH-MARIGOLD. (Man. p. 412; I. F. f. 1546.) In cool shaded mountain springs Pa. and N. J. to Md.—*Pennsylvania*: MONROE, Tunkhannock; SOMERSET, Negro Mt.

3. TROLLIUS L.

1. *Trollius laxus* Salisb. AMERICAN GLOBE-FLOWER. (Man. p. 413; I. F. f. 1548.) In swamps, N. H. to Del., west to Mich. Also in Rocky Mts., Wash. and B. C.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS, Springtown; CENTRE.

4. HELLEBORUS L.

1. *Helleborus viridis* L. GREEN HELLEBORE. (Man. p. 413; I. F. f. 1549.) In waste places, locally adv. from Eu. in N. Y., N. J., Pa. and W. Va.—*Pennsylvania*: LACKAWANNA; BUCKS; DELAWARE.

5. CAMMARUM Hill.

1. *Cammarum hyemale* (L.) Greene. WINTER ACONITE OR HELLEBORE. (Man. p. 413; I. F. f. 1550.) Nat. from Eu. in southeastern Pa.—*Pennsylvania*: PHILADELPHIA, Bartram's Garden; DELAWARE, Media.

6. XANTHORRHIZA L'Her.

1. *Xanthorrhiza apiifolia* L'Her. SHRUB YELLOW-ROOT. (Man. p. 414; I. F. f. 1553.) In woods, southwestern N. Y. to Fla.—*Pennsylvania*: Muhlenburg's Catalogue.

7. COPTIS Salisb.

1. *Coptis trifolia* (L.) Salisb. GOLD-THREAD. (Man. p. 413; I. F. f. 1551.) In damp mossy woods, and bogs, Newf. to Alaska, Md. and Minn.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON, LEBANON; SCHUYLKILL; COLUMBIA; TIOGA; CENTRE; HUNTINGDON; CRAWFORD; ERIE.

8. CIMICIFUGA L.

Carpels 1 or 2, sessile: seed wholly or partially in 2 rows. 1. *C. racemosa*.
Carpels 3-8, stipitate: seeds in 1 row. 2. *C. Americana*.

1. *Cimicifuga racemosa* (L.) Nutt. BLACK SNAKEROOT OR COHOSH. (Man. p. 415; I. F. f. 1556.) In woods, Me. to Wis., Ga., and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; BLAIR; ALLEGHENY.

1a. *C. racemosa dissecta* A. Gray. (Man. p. 415.)—DELAWARE, Upper Darby.

2. *Cimicifuga Americana* Michx. AMERICAN BUGBANE. (Man. p. 415; I. F. f. 1558.) In woods, Pa. and along the mountains to Ga.—*Pennsylvania*: BLAIR, Kittanning Point.

9. *ACTAEA* L.

Pedicels slender, less than 1 mm. thick : fruits red.

1. *A. rubra*.

Pedicels stout, over 1 mm. thick : fruits white.

2. *A. alba*.

1. *Actaea rubra* (Ait.) Willd. RED BANEERRY. (Man. p. 414; I. F. f. 1554.) In woods, N. S. to the Rocky Mt. region, N. J. and Pa.—*Pennsylvania*: SUSQUEHANNA; HUNTINGDON; ERIE.

2. *Actaea alba* (L.) Mill. WHITE BANEERRY. (Man. p. 415; I. F. f. 1555.) In woods, N. S. and Anticosti, to B. C., Ga. and Mo.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; BERKS; CHESTER; LANCASTER; YORK; LEBANON; SCHUYLKILL; TIOGA; BLAIR; ERIE; SOMERSET.

10. *AQUILEGIA* L.

Corollas mainly scarlet : petal-spurs straight or nearly so.

Sepals ovate to oblong-ovate, 10-14 mm. long : spurs 2-2.5 cm. long : follicles with spreading tips.

1. *A. Canadensis*.

Sepals lanceolate to ovate-lanceolate, 16-21 mm. long : spurs 3-3.5 cm. long : follicles with erect tips.

2. *A. coccinea*.

Corolla mainly blue : petal-spurs incurved.

3. *A. vulgaris*.

1. *Aquilegia Canadensis* L. WILD COLUMBINE. (man. p. 416; I. F. f. 1559.) In rocky woods, N. S. to the N. W. Terr., Fla., and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY; ERIE.

2. *Aquilegia coccinea* Small. LARGE RED COLUMBINE. (Man. p. 416.) On cliffs and in rocky woods, N. Y. to Mo., Neb. and Ala.—*Pennsylvania*: BEDFORD.

3. *Aquilegia vulgaris* L. EUROPEAN COLUMBINE. (Man. p. 416; I. F. f. 1561.) Escaped into woods and fields, in the Eastern and Middle States, in N. S. and N. B. Adv. or nat. from Eu.—*Pennsylvania*: MONROE; BUCKS; SOMERSET.

11. *DELPHINIUM* L.

Plants annual : carpel 1 : petals 2, unit. d.

Follicles pubescent.

1. *D. Ajacis*.

Follicles glabrous.

2. *D. Consolida*.

Plants perennial : carpels 3 : petals 4, distinct.

Follicles erect : racemes elongated.

Leaf-segments narrow, the ultimate divisions linear or oblong-linear.

3. *D. Carolinianum*.

Leaf-segments relatively broad, the ultimate divisions lanceolate.

4. *D. urceolatum*.

Follicles widely spreading : racemes short.

5. *D. tricornis*.

1. *Delphinium Ajacis* L. GARDEN LARKSPUR. (Min. p. 416.) In waste places, N. Y. to Va., Tenn. and Mo.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; LANCASTER; FRANKLIN.

2. Delphinium Consolida L. FIELD LARKSPUR. (Man. p. 416; I. F. f. 1562.) In waste places, nat. from Eu., N. J., Pa. and southward.—*Pennsylvania*: NORTHAMPTON.

3. Delphinium Carolinianum Walt. CAROLINA LARKSPUR. (Man. p. 417; I. F. f. 1564.) On prairies and in open grounds, Man. to Ill., Pa., Fla. and Tex. Also in the Rocky Mt. region.—*Pennsylvania*: Muhlenberg Catalogue.

4. Delphinium urceolatum Jacq. TALL LARKSPUR. (Man. p. 417; I. F. f. 1563.) In woods, Pa. to Minn., N. C., Ala. and Neb.—*Pennsylvania*: HUNTINGDON, near Petersburg; ALLEGHENY.

5. Delphinium tricornis Michx. DWARF LARKSPUR. (Man. p. 417; I. F. f. 1565.) In woods, Pa. to the mountains of Ga., Minn. and Ark.—*Pennsylvania*: ALLEGHENY; WASHINGTON; FAYETTE.

12. ACONITUM L.

1. Aconitum uncinatum L. WILD MONKSHOOD. (Man. p. 418; I. F. f. 1567.) In woods, Pa. and along the mountains to Ga. Also in Wis.—*Pennsylvania*: Muhlenberg Catalogue.

13. HEPATICA Scop.

Lobes of the leaf-blades and bracts of the involucre obtuse. 1. *H. Hepatica*.
Lobes of the leaf-blades and bracts of the involucre acute. 2. *H. acuta*.

1. Hepatica Hepatica (L.) Karst. ROUND-LOBED LIVER-LEAF. (Man. p. 420; I. F. f. 1578.) In woods, N. S. to Man., Fla., Iowa and Mo. Also in Eu. and Asia.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; VENANGO; SOMERSET; ALLEGHENY.

2. Hepatica acuta (Pursh) Britton. SHARP-LOBED LIVER-LEAF. (Man. p. 420; I. F. f. 1579.) In woods, Quebec and Ont., south in the Alleghenies to Ga., west to Iowa and Minn.—*Pennsylvania*: SULLIVAN; HUNTINGDON; CAMBRIA; SOMERSET; ARMSTRONG; ERIE; ALLEGHENY.

14. ANEMONE L.

Achenes densely woolly.

Achene-beak about 1 mm. long: leaf-divisions of a cuneate type.

1. *A. cylindrica*.

Achene-beak about 2 mm. long: leaf-divisions of an ovate type.

Sepals greenish: head of fruit mostly over 1 cm. thick: achenes with spreading styles. 2. *A. Virginiana*.

Sepals clear white: head of fruit mostly less than 1 cm. thick: achenes with appressed or ascending styles. 3. *A. riparia*.

Achenes glabrate or finely pubescent, never woolly.

Bracts of the involucre sessile: achenes suborbicular. 4. *A. Canadensis*.

Bracts of the involucre petioled: achenes oblong.

Divisions of the involucre bracts lobed or incised, membranous.

5. *A. quinquefolia*.

Divisions of the involucre bracts merely toothed, leathery at maturity.

6. *A. trifolia*.

1. *Anemone cylindrica* A. Gray. LONG-FRUITED ANEMONE. (Man. p. 419; I. F. f. 1572.) Open places, N. B. and Ont., Man., N. J. and Kans. Also in Rocky Mts.—*Pennsylvania*: ERIE, Presque Isle; LUZERNE.

2. *Anemone Virginiana* L. TALL ANEMONE. (Man. p. 419; I. F. f. 1573.) In woods, N. S. and the Canadian Rocky Mts., to S. C., Kans.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

3. *Anemone riparia* Fernald. RIVER-BANK ANEMONE. (Man. p. 419.) On river banks, Me. and Ont. to Va.—*Pennsylvania*: BUCKS; NORTHAMPTON.

4. *Anemone Canadensis* L. CANADA ANEMONE. (Man. p. 419; I. F. f. 1574.) Low grounds, Lab. to the N. W. Terr., Pa., Kans. and in the Rocky Mts. to Colo.—*Pennsylvania*: LANCASTER; FRANKLIN; ERIE, Presque Isle; ALLEGHENY.

5. *Anemone quinquefolia* L. WIND-FLOWER. (Man. p. 419; I. F. f. 1576.) In low woods, N. S. to the Rocky Mts. and Ga. Also in China.—*Pennsylvania*: MONROE; SCHUYLKILL; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; CLEARFIELD; ALLEGHENY; ERIE.

6. *Anemone trifolia* L. MOUNTAIN ANEMONE. (Man. p. 419; I. F. f. 1577.) Pa. to Va. and N. C., chiefly in the mountains. Also in the mountains of south-central Eu. *Pennsylvania*: FAYETTE.

15. SYNDESMON Hoffmg.

1. *Syndesmon thalioides* (L.) Hoffmg. RUE-ANEMONE. (Man. p. 420; I. F. f. 1580.) In woods, throughout eastern U. S., west to Kans. and Minn.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; YORK; HUNTINGDON; BLAIR; VENANGO; ERIE; ALLEGHENY.

16. CLEMATIS L.

Stamens spreading : sepals spreading : flowers polygamo-dioecious.

1. *C. Virginiana*.

Stamens erect : sepals more or less converging : flowers perfect.

Climbing vine : leaf-blades pinnate, not reticulated. 2. *C. Viorna*.

Upright herb : leaf-blades simple, reticulated. 3. *C. ochroleuca*.

1. *Clematis Virginiana* L. VIRGINIA VIRGIN'S BOWER. (Man. p. 421; I. F. f. 1582.) N. S. to Man., Ga. to Kans.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; BEDFORD; HUNTINGDON; CENTRE; LUZERNE; SCHUYLKILL; ALLEGHENY.

2. *Clematis Viorna* L. LEATHER-FLOWER. (Man. p. 422; I. F. f. 1586.) Pa. to Ohio, Ga. and Tenn.—*Pennsylvania*: CHESTER; FRANKLIN; GREENE; ALLEGHENY.

3. Clematis ochroleuca Ait. ERECT SILKY CLEMATIS. (Man. p. 422; I. F. *f.* 1588.) N. Y., Pa. and southward to Ga.—*Pennsylvania*: CHESTER, London Grove.

17. ATRAGENE L.

1. Atragene Americana Sims. PURPLE VIRGIN'S BOWER. (Man. p. 423; I. F. *f.* 1592.) Hudson Bay to Man., N. C. and Minn.—*Pennsylvania*: MONROE; SUSQUEHANNA; SULLIVAN; NORTHAMPTON; BUCKS; MONTGOMERY; BERKS; CHESTER; LANCASTER; HUNTINGDON.

18. TRAUTVETTERIA F. & M.

1. Trautvetteria Carolinensis (Walt.) Vail. FALSE BUGBANE. (Man. p. 423; I. F. *f.* 1594.) On shaded banks, Pa. to Mo. and Fla.—*Pennsylvania*: FAYETTE; ALLEGHENY.

19. BATRACHIUM S. F. Gray.

Achene with a beak about 1 mm. long.

1. *B. divaricatum*.

Achene beakless or nearly so.

2. *B. trichophyllum*.

1. Batrachium divaricatum (Schrank) Wimm. STIFF WHITE WATER-CROWFOOT. (Man. p. 429; I. F. *f.* 1627.) In ponds and slow streams, Ont., New England, northern N. J. and Pa. to the Pacific Coast, extending south in the Rocky Mts. to Ariz. Also in Eu.—*Pennsylvania*: HUNTINGDON; ERIE, Presque Isle.

2. Batrachium trichophyllum (Chaix.) Bossch. WHITE WATER-CROWFOOT. (Man. p. 429; I. F. *f.* 1626.) In ponds and streams, N. S. to B. C., to N. C. and Calif. Also in Eu. and Asia.—*Pennsylvania*: BUCKS; MONROE; SUSQUEHANNA; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; LYCOMING; HUNTINGDON.

20. HALERPESTES Greene.

1. Helerpestes cymbalaria (Pursh) Greene. SEASIDE CROWFOOT. (Man. p. 430; I. F. *f.* 1631.) On sandy shores, Lab. to N. J., west to the N. W. Terr., and in saline soil throughout the western half of the continent, extending into Mexico. Also in Asia and S. A.—*Pennsylvania*: FRANKLIN.

21. FICARIA Huds.

1. Ficaria Ficaria (L.) Karst. LESSER CELANDINE. (Man. p. 430; I. F. *f.* 1629.) N. Y. and Pa. Fugitive from Eu.—*Pennsylvania*: DELAWARE; PHILADELPHIA.

22. RANUNCULUS L.

Aquatic, floating plants: submerged leaves with dissected blades: floating leaves with lobed blades.

Achenes marginless: corolla 7-14 mm. broad.

1. *R. Purshii*.

Achenes callous-margined: corolla 18-36 mm. broad.

2. *R. delphinifolius*.

Terrestrial or mud plants: leaves with entire, toothed, lobed or divided blades.

A. Mud plants: leaves with entire or denticulate blades.

a. Annuals: achenes beakless.

3. *R. pusillus*.

- b. Perennial: stems creeping, at least near the base: achenes beaked.
 Achenes minutely beaked: stems trailing. 4. *R. reptans*.
 Achenes subulate-beaked: stems erect or ascending. 5. *R. obtusiusculus*.
- B. Terrestrial plants: leaves with all or some of the blades lobed or divided.
 Basal leaves with all or some of the blades crenate.
 Style very short.
 Basal leaves with cordate blades: foliage glabrous or nearly so. 6. *R. abortivus*.
 Basal leaves with truncate or cuneately narrowed blades; foliage pubescent. 7. *R. micranthus*.
 Style subulate, hooked, nearly $\frac{1}{2}$ as long as the achene-body. 8. *R. Allegheniensis*.
- Basal leaves with all blades lobed or divided.
 Foliage glabrous: stem hollow; flowers relatively small. 9. *R. scleratus*.
 Foliage more or less pubescent: stems not hollow: flowers relatively large.
 Beaks of the achenes hooked. 10. *R. recurvatus*.
 Beaks of the achenes straight or slightly curved.
 Achenes with beaks less than $\frac{1}{2}$ as long as the achene-bodies.
 Petals about as long as the sepals: head of fruit oblong or cylindric. 11. *R. Pennsylvanicus*.
 Petals much longer than the sepals: head of fruit subglobose.
 Plants spreading and creeping, stoloniferous. 12. *R. repens*.
 Plants erect, not stoloniferous.
 Sepals spreading. 13. *R. acris*.
 Sepals reflexed. 14. *R. bulbosus*.
 Achenes with beaks over $\frac{1}{2}$ as long as the achene-bodies, the beaks sometimes partially deciduous.
 Plants stoloniferous: foliage glabrous or nearly so. 15. *R. septentrionalis*.
 Plants not stoloniferous: foliage copiously pubescent except sometimes in age.
 Stems with silky or appressed pubescence. 16. *R. fascicularis*.
 Stems with spreading pubescence. 17. *R. hispidus*.

1. *Ranunculus Purshii* Richards. PURSH'S BUTTERCUP. (Man. p. 424; I. F. f. 1596.) In moist soil, Mich. and Minn. to western Ont., Pa. and Arctic Am., west to B. C., south in the Rocky Mts. to Colo. and Utah. —*Pennsylvania*: FRANKLIN; DAUPHIN; HUNTINGDON.

2. *Ranunculus delphinifolius* Torr. YELLOW WATER-CROWFOOT. (Man. p. 425; I. F. f. 1595.) In ponds, Ont. to Mich., N. C. and Mo. —*Pennsylvania*: HUNTINGDON, barrens.

3. *Ranunculus pusillus* Poir. LOW SPEARWORT. (Man. p. 425; I. F. f. 1600.) In marshes, N. Y. and N. J. to Mo., Fla. and Tex. —*Pennsylvania*: BUCKS; YORK; FRANKLIN; CHESTER.

4. *Ranunculus reptans* L. CREEPING SPEARWORT. (Man. p. 425; I. F. f. 1602.) On shores, Newf. and Arctic Am., to N. J., Pa. and Mich.,

and in the Rocky Mts. to Colo. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; CLEARFIELD.

5. *Ranunculus obtusiusculus* Raf. WATER PLANTAIN SPEARWORT. (Man. p. 425; I. F. f. 1603.) In marshes, Me. and Ont. to Minn., Ga. and Mo.—*Pennsylvania*: PIKE; DELAWARE; CHESTER; LANCASTER; DAUPHIN; YORK; FRANKLIN; HUNTINGDON; BLAIR.

6. *Ranunculus abortivus* L. KIDNEY-LEAVED CROWFOOT. (Man. p. 426; I. F. f. 1609.) In woods and moist grounds, Lab. and N. S. to Man., Fla., Ark. and Col.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

7. *Ranunculus micranthus* Nutt. ROCK CROWFOOT. (Man. p. 426; I. F. f. 1610.) In rich woods, often on rocks, range apparently the same as the preceding.—*Pennsylvania*: BUCKS; FRANKLIN; LANCASTER; YORK.

8. *Ranunculus Allegheniensis* Britton. MOUNTAIN CROWFOOT. (Man. p. 427; I. F. f. 1611.) Mass. to N. Y. and N. C., mainly in the mountains.—*Pennsylvania*: SOMERSET.

9. *Ranunculus sceleratus* L. CELERY-LEAVED CROWFOOT. (Man. p. 427; I. F. f. 1612.) In swamps and wet ditches, N. B. to Minn. and Fla., preferring saline or alkaline situations.—*Pennsylvania*: LANCASTER; DAUPHIN; CHESTER; DELAWARE.

10. *Ranunculus recurvatus* Poir. HOOKED CROWFOOT. (Man. p. 427; I. F. f. 1613.) In woods, N. S. to Man., Fla. and Mo.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; YORK; FRANKLIN; ALLEGHENY; DELAWARE.

11. *Ranunculus Pennsylvanicus* L.f. BRISTLY BUTTERCUP. (Man. p. 427; I. F. f. 1616.) In wet open places, N. S. to B. C. and Ga.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN; FRANKLIN; ERIE; DELAWARE.

12. *Ranunculus repens* L. CREEPING BUTTERCUP. (Man. p. 427; I. F. f. 1618.) Fields and roadsides, N. S. to Va. and locally in the interior. Introduced from Eu. mainly.—*Pennsylvania*: NORTHAMPTON; BUCKS; BRISTOL; PHILADELPHIA; DELAWARE.

13. *Ranunculus acris* L. TALL OR MEADOW BUTTERCUP. (Man. p. 427; I. F. f. 1611.) In fields, in the northern States and Can. Nat. from Eu.—*Pennsylvania*: LACKAWANNA; MONROE; TIOGA; SCHUYLKILL; LUZERNE; NORTHAMPTON; BUCKS; MONTGOMERY; CHESTER; LANCASTER; BLAIR; ALLEGHENY; DELAWARE.

14. *Ranunculus bulbosus* L. BULBOUS BUTTERCUP. (Man. p. 427; I. F. f. 1615.) In fields and along roadsides, quite common in the eastern U. S. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; MONROE; CHESTER; LANCASTER; DELAWARE.

15. *Ranunculus septentrionalis* Poir. SWAMP OR MARSH BUTTERCUP. (Man. p. 427; I. F. f. 1619.) In low ground and swamps, N. B.

to Man., Ga. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

16. *Ranunculus fascicularis* Muhl. EARLY OR TUFTED BUTTERCUP. (Man. p. 428; I. F. f. 1621.) In woods, Ont. and N. Eng. to Man., N. C. and Tex.—*Pennsylvania*: LANCASTER; FRANKLIN.

17. *Ranunculus hispidus* Michx. HISPID BUTTERCUP. (Man. p. 428; I. F. f. 1620.) In dry woods, Ont. to the N. W. Terr., Ga. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; LEBANON; FRANKLIN; VENANGO; ARMSTRONG; DELAWARE.

23. THALICTRUM L.

Filaments subulate or filiform.

Flowers strictly dioecious: leaflets not waxy beneath.

Roots not yellow: petioles barely dilated at the base. 1. *T. dioicum*.

Roots bright yellow: petioles widely dilated at the base.

2. *T. coriaceum*.

Flowers polygamous: leaflets more or less glandular or waxy beneath.

3. *T. purpurascens*.

Filaments spatulate, often broader than the anthers.

4. *T. polygamum*.

1. *Thalictrum dioicum* L. EARLY MEADOW-RUE. (Man. p. 431; I. F. f. 1634.) In woods, Lab. and Anticosti, Saskatchewan to Ala. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; ERIE; DELAWARE; YORK; ALLEGHENY.

2. *Thalictrum coriaceum* (Britton) Small. THICK-LEAVED MEADOW-RUE. (Man. p. 431; I. F. f. 1635.) In open places, mts. of Pa., Va., N. C. and Ky.—*Pennsylvania*: SOMERSET.

3. *Thalictrum purpurascens* L. PURPLISH MEADOW-RUE. (Man. p. 431; I. F. f. 1637.) In woodlands, N. S. and Anticosti to the Saskatchewan, Fla. and Ariz.—*Pennsylvania*: NORTHAMPTON; DELAWARE; HUNTINGDON; CENTRE; ALLEGHENY.

4. *Thalictrum polygamum* Muhl. TALL MEADOW RUE. (Man. p. 431; I. F. f. 1638.) Lab. and Quebec to Fla. and to Ohio.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; SCHUYLKILL; COLUMBIA; FRANKLIN; PERRY; ERIE; DELAWARE; ALLEGHENY.

FAMILY 6. MENISPERMACEAE DC. MOONSEED FAMILY.

1. MENISPERMUM L.

1. *Menispermum Canadense* L. CANADA MOONSEED. (Man. p. 434; I. F. f. 1649.) In woods along streams, western Quebec to Man., Ga. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; ALLEGHENY.

FAM. 7. CALYCANTHACEAE Lindl. STRAWBERRY-SHRUB FAMILY.

1. BUTNERIA Duham.

1. *Butneria fertilis* (Walt.) Kearney. SMOOTH STRAWBERRY-SHRUB. (Man. p. 435; I. F. f. 1651.) In rich woods, Pa. to Ga. and Ala.—*Pennsylvania*: FRANKLIN, near Strasburg.

FAMILY 8. **BERBERIDACEAE** T. & G. BARBERRY FAMILY.

Shrubs: leaves with pinnately compound blades, sometimes 1-foliate.

1. **BERBERIS**.

Herbs: leaves with simple or ternately compound blades.

Anthers opening by valves hinged at the top.

Leaf-blades ternately compound: seeds naked, berry-like.

2. **CAULOPHYLLUM**.

Leaf-blades simple: seeds enclosed.

3. **JEFFERSONIA**.

Anthers opening lengthwise.

4. **PODOPHYLLUM**.1. **BERBERIS** L.

1. *Berberis vulgaris* L. EUROPEAN BARBERRY. (Man. p. 432; I. F. f. 1640.) In thickets, nat. from Eu. in the Eastern and Middle States, adv. in Canada and the West.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; SUSQUEHANNA.

2. **CAULOPHYLLUM** Michx.

1. *Caulophyllum thalictroides* (L.) Michx. BLUE COHOSH. (Man. p. 433; I. F. f. 1643.) In woods, N. B. to Minn., S. C. and Neb.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; MONROE; CHESTER; LANCASTER; HUNTINGDON; TIOGA; ERIE; SOMERSET; DELAWARE; ALLEGHENY.

3. **JEFFERSONIA** Bart.

1. *Jeffersonia diphylla* (L.) Pers. TWIN-LEAF. (Man. p. 433; I. F. f. 1645.) In woods, N. Y. to Wis., Va. and Tenn.—*Pennsylvania*: BUCKS; MIFFLIN; HUNTINGDON; FAYETTE; WASHINGTON; ALLEGHENY.

4. **PODOPHYLLUM** L.

1. *Podophyllum peltatum* L. MAY APPLE. WILD MANDRAKE. (Man. p. 433; I. F. f. 1646.) In low woods, Quebec to Minn., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; DELAWARE; ALLEGHENY.

FAMILY 9. **LAURACEAE** Lindl. LAUREL FAMILY.

Anthers 4-celled, 4-valved: leaf-blades, or some of them, lobed.

1. **SASSAFRAS**.

Anthers 2-celled, 2-valved: leaf-blades entire.

2. **BENZOIN**.1. **SASSAFRAS** Nees & Eberm.

1. *Sassafras Sassafras* (L.) Karst. SASSAFRAS OR AGUE TREE. (Man. p. 436; I. F. f. 1654.) In dry or sandy soil, Mass. to Ont., Mich., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. **BENZOIN** Fabric.

1. *Benzoin Benzoin* (L.) Coult. SPICE-BUSH. BENJAMIN-BUSH. (Man. p. 437; I. F. f. 1656.) In moist woods and along streams, Mass. to Ont., Mich., Kans., N. C. and Tenn.—*Pennsylvania*: MONROE;

NORTHAMPTON; BUCKS; CHESTER; LANCASTER; HUNTINGDON; DELAWARE; ALLEGHENY.

Order 12. PAPAVERALES.

Sepals 2, or very rarely 3 or 4: endosperm present.

Flowers regular: stamens 8 or numerous: juice usually milky or colored.

Fam. 1. PAPAVERACEAE.

Flowers irregular: stamens 6: juice usually watery.

Fam. 2. FUMARIACEAE.

Sepals 4-8: endosperm wanting.

Capsules 2-celled: stamens 6, tetradynamous. Fam. 3. CRUCIFERAE.

Capsules 1-celled: stamens when 6, not tetradynamous.

Calyx and corolla regular: gynoeceium 2-carpellary: capsule 2-valved.

Fam. 4. CAPPARIDACEAE.

Calyx and corolla irregular: gynoeceium 3-6-carpellary: capsule 3-6-valved.

Fam. 5. RESEDACEAE.

FAMILY 1. PAPAVERACEAE B. Juss. POPPY FAMILY.

Caulescent herbs: petals 4-6, mostly crumpled: stigmas over the placentae.

Capsule dehiscent at the top or only to the middle.

Leaf-blades unarmed.

1. PAPAVER.

Leaf-blades spiny-toothed.

2. ARGEMONE.

Capsule splitting to the base.

Capsule pubescent.

3. STYLOPHORUM.

Stigma mitre-shaped, with a deflexed or spreading base on each side: capsule leathery, 2-celled by a spongy partition.

4. GLAUCIUM.

Stigma simple: capsules membranous, 1-celled.

5. CHELIDONIUM.

Acaulescent herbs: petals 8-12, not crumpled in the bud: stigmas over the valves of the capsule.

6. SANGUINARIA.

1. PAPAVER L.

Plants glabrate, glaucous: leaves with lobed clasping blades: capsule subglobose.

1. *P. somniferum*.

Plants hirsute, green: leaves with pinnately divided blades.

Capsule glabrous.

Capsule subglobose or turbinate.

2. *P. Rhoeas*.

Capsule oblong above the narrowed base.

3. *P. dubium*.

Capsule hispid.

4. *P. Argemone*.

1. *Papaver somniferum* L. OPIUM OR GARDEN POPPY. (Man. p. 438; I. F. f. 1658.) In waste grounds and on ballast. Fugitive from Eu. — *Pennsylvania*: NORTHAMPTON; PHILADELPHIA; LANCASTER; DELAWARE; ALLEGHENY.

2. *Papaver Rhoeas* L. FIELD, RED OR CORN POPPY. (Man. p. 438; I. F. f. 1659.) In waste places and on ballast. Fugitive from Eu. — *Pennsylvania*: PHILADELPHIA.

3. *Papaver dubium* L. LONG SMOOTH-FRUITED POPPY. (Man. p. 438; I. F. f. 1660.) In waste and cult. grounds, Pa. to Va. and southward. — *Pennsylvania*: NORTHAMPTON; CHESTER; DELAWARE; LANCASTER; FRANKLIN.

4. *Papaver Argemone* L. LONG ROUGH-FRUITED POPPY. (Man. p. 438; I. F. f. 1661.) Waste grounds and on ballast. Fugitive from Eu. — *Pennsylvania*: PHILADELPHIA.

2. ARGEMONE L.

1. *Argemone Mexicana* L. MEXICAN OR PRICKLY POPPY. (Man. p. 439; I. F. f. 1663.) In waste places, N. J. and Pa. to Fla. and Tex. Adv. from tropical Am.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DELAWARE.

3. STYLOPHORUM Nutt.

1. *Stylophorum diphyllum* (Michx.) Nutt. YELLOW OR CELANDINE POPPY. (Man. p. 440; I. F. f. 1666.) In low woods, western Pa. (?), Ohio to Tenn., west to Wis. and Mo.—*Pennsylvania*: Reported as collected in Allegheny County several times, but specimens apparently lost.

4. GLAUCIUM Juss.

1. *Glaucium Glaucium* (L.) Karst. YELLOW HORNED OR SEA POPPY. (Man. p. 440; I. F. f. 1667.) In waste places, Long Island and southward near the coast to Va. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA, on and about ballast.

5. CHELIDONIUM L.

1. *Chelidonium majus* L. CELANDINE. (Man. p. 440; I. F. f. 1668.) Waste places, roadsides and even in woods, common in the East. Nat. or adv. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; MONROE; FRANKLIN; DELAWARE; ALLEGHENY.

6. SANGUINARIA L.

1. *Sanguinaria Canadensis* L. BLOODROOT. (Man. p. 439; I. F. f. 1665.) In rich woods, N. S. to Man., Neb., Fla. and Ark.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; HUNTINGDON; ERIE; ALLEGHENY.

FAMILY 2. FUMARIACEAE DC. FUMITORY FAMILY.

Each of the 2 outer petals spurred at the base.

Petals lightly united, deciduous: seeds mostly crested: acaulescent herbs.

1. BICUCULLA.

Petals permanently united and enclosing the capsule: seeds crestless: vines.

2. ADLUMIA.

One of the two outer petals spurred at the base.

Ovules several or many: fruit an elongated capsule.

3. CAPNOIDES.

Ovule solitary: fruit a glabrous nutlet.

4. FUMARIA.

1. BICUCULLA Adans.

Inflorescence racemose: flowers white, greenish, pale pink or purplish tinged. Rootstocks merely scaly: petal-spurs spreading: inner petals minutely crested.

1. *B. Cucullaria*.

Rootstocks with yellow tubers: petal-spurs rounded: inner petals conspicuously crested.

2. *B. Canadensis*.

Inflorescence paniculate: flowers deep pink.

3. *B. eximia*.

1. *Bicuculla Cucullaria* (L.) Millsp. DUTCHMAN'S BREECHES. (Man. p. 440; I. F. f. 1669.) In woods, N. S. to Minn. and Wash., N. C., Neb. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; FRANKLIN; ALLEGHENY; ERIE; DELAWARE.

2. *Bicuculla Canadensis* (Goldie) Millsp. SQUIRREL CORN. (Man. p. 441; I. F. f. 1670.) In rich woods, N. S. to Minn., south along the mountains to Va. and Ky., west to Mo.—*Pennsylvania*: LANCASTER; YORK; BUCKS; SULLIVAN; HUNTINGDON; ERIE; CHESTER; ALLEGHENY.

3. *Bicuculla eximia* (Ker) Millsp. WILD BLEEDING-HEART. (Man. p. 441; I. F. f. 1671.) In rocky places, N. Y. to Ga. and Tenn., along the Alleghenies.—*Pennsylvania*: MCKEAN.

2. ADLUMIA Raf.

1. *Adlumia fungosa* (Ait.) Greene. CLIMBING FUMITORY. (Man. p. 441; I. F. f. 1672.) In moist woods, N. B. to Mich., N. C. and Kans.—*Pennsylvania*: HUNTINGDON; BUCKS; CHESTER; YORK; SUSQUEHANNA; LAWRENCE.

3. CAPNOIDES Adans.

Corolla pink or purple, with a yellow tip: stems erect. 1. *C. sempervirens*.
Corolla yellow: stems diffusely spreading. 2. *C. flavulum*.

1. *Capnoides sempervirens* (L.) Borck. PINK CORYDALIS. (Man. p. 441; I. F. f. 1673.) In rocky places, N. S. to the Canadian Rocky Mts., N. C. and Minn. Also in B. C. and Alaska.—*Pennsylvania*: PIKE; MONROE; LUZERNE; LANCASTER; DAUPHIN; TIOGA; FRANKLIN; ERIE; SOMERSET; ALLEGHENY.

2. *Capnoides flavulum* (Raf.) Kuntze. PALE CORYDALIS. (Man. p. 442; I. F. f. 1674.) In rocky woods, N. Y. to Ont., Minn., Va., Ky. and Ia.—*Pennsylvania*: PHILADELPHIA; CHESTER; LANCASTER; DAUPHIN; CUMBERLAND; FRANKLIN; HUNTINGDON.

4. FUMARIA L.

1. *Fumaria officinalis* L. FUMITORY. (Man. p. 442; I. F. f. 1680.) In waste places and on ballast, N. S. to Fla. and the Gulf States and locally in the interior. Fug. or adv. from Eu.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; LANCASTER; HUNTINGDON; DELAWARE.

FAMILY 3. CRUCIFERAE B. Juss. MUSTARD FAMILY.

A. Pods not stipitate.

Pods flattened or compressed contrary to the narrow partition.

Pods didymous, separating from the partition as 2 plump nutlets.

1. CORONOPUS.

Pods flat, regularly dehiscent.

Pods cuneate, wingless.

2. BURSA.

Pods orbicular to elliptic or obovate, winged or margined at least at the apex.

Pods orbicular or obovate: seeds 1-2.

Seed solitary in each cavity of the pod.

3. LEPIDIUM.

Seeds several in each cavity of the pod.

4. THLASPI.

Pods neither compressed nor flattened contrary to the partition, terete or prismatic or flattened or compressed parallel to the partition.

a. Pods terete or prismatic.

Pods regularly dehiscent.

Length of pod less than twice the width.

Seeds flat : plants pubescent with mostly branched hairs.

5. CAMELINA.

Seeds turgid : plants pubescent with simple hairs or glabrous.

6. RORIPA.

Length of pod over twice the width.

Pods merely tipped by the short style or style wanting, not beaked.

Pods terete or nearly so.

Seeds in 2 rows in each cavity of the pod. 6. RORIPA.

Seeds in 1 row in each cavity of the pod.

Leaf-blades pinnatifid or coarsely toothed.

Outer sepals not horned : corolla yellow or white.

7. SISYMBRIUM.

Outer sepals horned : corolla violet or purple.

8. IODANTHUS.

Leaf-blades entire or slightly toothed.

9. HESPERIS.

Pods 4-sided or 4-angled.

Corolla white.

10. STENOPHRAGMA.

Corolla yellow.

Seeds flat : leaf-blades pinnatifid.

11. BARBAREA.

Seeds plump : leaf-blades entire or toothed.

Leaf-blades narrow : plant pubescent. 12. ERYSIMUM.

Leaf-blades cordate-clasping : plant glabrous.

13. CONRINGIA.

Pods markedly beaked.

Beak flat and sword-like.

14. SINAPIS.

Beak conic.

15. BRASSICA.

Pods indehiscent.

Pods elongated, transversely jointed or constricted between the seeds, the valves not reticulated.

Pods not transversely jointed, merely constricted between the seeds.

16. RAPHANUS.

Pods transversely jointed, separating into 2 parts.

Lower joint of the pod seedless or 2-4-seeded : cotyledons conduplicate.

17. RAPISTRUM.

Lower joint of the pod 1-seeded : cotyledons accumbent.

18. CAKILE.

Pods globular, the valves reticulated.

19. NESLIA.

b. Pods flattened or compressed parallel to the broad partition.

Pods suborbicular, or oval.

Corolla yellow.

20. ALYSSUM.

Corolla white.

Petals entire.

21. KONIGA.

Petals cleft.

22. BERTEROA.

Pods oblong to narrowly linear.

*Valves of the pods nerveless.

Seeds in 2 rows in each cavity.

23. DRABA.

Seeds in 1 row in each cavity.

Caulescent, with alternate leaves : embryo with equal cotyledons.

24. CARDAMINE.

Scapose, with 2-4 leaf-like bracts subtending the peduncle : embryo with unequal cotyledons.

25. DENTARIA.

** Valves of the pods nerved.

Leaf-blades entire or merely toothed.

Pods oval, oblong or broadly linear.

Pods narrowly linear to linear-filiform.

Leaf-blades finely dissected or pinnatifid.

Leaf-blades pinnately dissected.

Leaf-blades pinnatifid.

23. DRABA.

26. ARABIS.

27. SOPHIA.

28. DIPLOTAXIS.

29. LUNARIA.

B. Pods stipitate.

1. CORONOPUS Gaertn.

Capsules finely wrinkled, crested.

1. *C. didymus*.

Capsules tuberculate-wrinkled, crestless.

2. *C. Coronopus*.

1. **Coronopus didymus** (L.) J. E. Smith. LESSER WART-CRESS. (Man. p. 446; I. F. f. 1690.) In waste places, Newf. to Mo., Calif. and Texas.—*Pennsylvania*: PHILADELPHIA, ballast.

2. **Coronopus Coronopus** (L.) Karst. WART or SWINE'S CRESS. (Man. p. 446; I. F. f. 1691.) In waste places and on ballast, N. B. to Fla. and the Gulf States. Fug. or adv. from Eu.—*Pennsylvania*: PHILADELPHIA, ballast; CHESTER.

2. BURSA Weber.

1. **Bursa Bursa-pastoris** (L.) Weber. SHEPHERD'S PURSE. (Man. p. 459; I. F. f. 1752.) In fields and waste places. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

3. LEPIDIUM L.

Blades of the stem-leaves auricled at the base and clasping.

Pods longer than broad, winged.

1. *L. campestre*.

Pods broader than long, wingless.

2. *L. Draba*.

Blades of the stem-leaves petioled or merely sessile, not clasping.

Pods wingless.

3. *L. ruderales*.

Pods more or less winged.

Pods winged at the top.

Cotyledons accumbent: corolla generally present.

4. *L. Virginicum*.

Cotyledons incumbent: corolla minute, obsolete or wanting.

5. *L. apetalum*.

6. *L. sativum*.

Pods winged all around.

1. **Lepidium campestre** (L.) R. Br. FIELD OR COW CRESS. (Man. p. 445; I. F. f. 1684.) In fields and waste places, N. B. and Ont. to Va., and on the Pacific Coast. Nat. from Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; LANCASTER; DAUPHIN; ALLEGHENY.

2. **Lepidium Draba** L. HOARY CRESS. (Man. p. 445; I. F. f. 1685.) Near N. Y., and on ballast about the seaports. Also in Colo. and Calif. Fugitive from Eu.—*Pennsylvania*: PHILADELPHIA.

3. **Lepidium ruderales** L. ROADSIDE OR NARROW-LEAVED PEPPER-GRASS. (Man. p. 445; I. F. f. 1686.) In waste places, on ballast and along roadsides about the cities, U. S. to Tex. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA.

4. *Lepidium Virginicum* L. WILD PEPPER-GRASS. (Man. p. 446; I. F. f. 1687.) In fields and along roadsides, Quebec to Minn., Fla., Tex. and Mex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; DELAWARE; ALLEGHENY.

5. *Lepidium apetalum* Willd. APETALOUS PEPPER-GRASS. (Man. p. 446; I. F. f. 1688.) In dry soil, Me. and Ont. to Calif., Tex. Apparently nat. from Eu.—*Pennsylvania*: PIKE; MONROE; BUCKS; PHILADELPHIA.

6. *Lepidium sativum* L. GARDEN OR TOWN PEPPER-GRASS. (Man. p. 446; I. F. f. 1689.) In waste places, Quebec to Pa. and B. C. Native of Eu.—*Pennsylvania*: PHILADELPHIA; FRANKLIN.

4. *THLASPI* L.

1. *Thlaspi arvense* L. FIELD PENNY-CRESS. (Man. p. 447; I. F. f. 1692.) In waste places and on ballast, sparingly adv. or fugitive from Eu. in the Eastern and Middle States, also in Quebec, Man. and the N. W. Terr.—*Pennsylvania*: PHILADELPHIA; LANCASTER.

5. *CAMELINA* Crantz.

Plant glabrous or nearly so: silicles 6-8 mm. long.

1. *C. sativa*.

Plant pubescent: silicles 4-6 mm. long.

2. *C. microcarpa*.

1. *Camelina sativa* (L.) Crantz. GOLD-OF-PLEASURE. FALSE-FLAX. (Man. p. 459; I. F. f. 1753.) In fields and waste places throughout northern U. S. Adv. or nat. from Eu.—*Pennsylvania*: LANCASTER; FRANKLIN; HUNTINGDON; DELAWARE; CHESTER.

2. *Camelina microcarpa* Andr. SMALL-FRUITED FALSE-FLAX. (Man. p. 459; I. F. f. 1753a.) In waste places, R. I. to B. C. and Tenu. Nat. or adv. from Eu.—*Pennsylvania*: NORTHAMPTON; DELAWARE; FRANKLIN.

6. *RORIPA* Scop.

Corolla yellow.

Plants perennial by creeping or horizontal stems: petals mostly surpassing the sepals.

1. *R. sylvestris*.

Plants annual or perennial, with fibrous roots: petals mostly shorter than the sepals.

Pods linear or narrowly oblong, as long as the pedicels or longer: stems glabrous or nearly so.

2. *R. palustris*.

Pods subglobose or oval, shorter than the pedicels: stems pubescent.

3. *R. hispida*.

Corolla white.

Leaf-blades pinnately divided: pods linear.

4. *R. Nasturtium*.

Leaf-blades lobed, pinnatifid, dissected or the upper ones merely toothed: pods oblong to globose.

Species terrestrial: leaf-blades crenate, lobed or pinnatifid.

5. *R. Armoracia*.

Species aquatic: leaf-blades, at least those of the submerged leaves, finely dissected.

6. *R. Americana*.

1. *Roripa sylvestris* (L.) Bess. CREEPING YELLOW WATER-CRESS. (Man. p. 452; I. F. f. 1713.) In low grounds and waste places, Mass.

to Va. and Ohio. Adv. or nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA.

2. *Roripa palustris* (L.) Bess. MARSH OR YELLOW WATER-CRESS. (Man. p. 452; I. F. f. 1717.) In wet places, nearly throughout N. Am. except the extreme north. Also in Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; COLUMBIA; HUNTINGDON; ERIE; DELAWARE; ALLEGHENY.

3. *Roripa hispida* (Desv.) Britton. HISPID YELLOW-CRESS. (Man. p. 453; I. F. f. 1718.) In wet places, N. B. to B. C., Fla. and N. Mex. —*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON.

4. *Roripa Nasturtium* (L.) Rusby. WATER-CRESS. (Man. p. 453; I. F. f. 1721.) In brooks and streams, N. S. to Man., Va. and Mo. Nat. from Eu. Native also of northern Asia, introd. into S. Am. and western N. Am.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; BERKS; FRANKLIN; ERIE.

5. *Roripa Armoracia* (L.) A. S. Hitchcock. HORSERADISH. (Man. p. 453; I. F. f. 1722.) Escaped into moist grounds. Adv. from Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; HUNTINGDON; LANCASTER; FRANKLIN; DELAWARE; ALLEGHENY.

6. *Roripa Americana* (A. Gray) Britton. LAKE WATER-CRESS. (Man. p. 453; I. F. f. 1723.) In lakes and slow streams, Vt. to Fla. and La., from western Quebec to Minn.—*Pennsylvania*: PHILADELPHIA.

7. *SISYMBRIUM* L.

Corolla yellow: pods appressed to the rachis, 1-1.5 cm. long.

1. *S. officinale*.

Corolla cream-colored: pods spreading, 5-10 cm. long.

2. *S. altissimum*.

1. *Sisymbrium officinale* (L.) Scop. HEDGE MUSTARD. (Man. p. 448; I. F. f. 1696.) In waste places throughout northeastern U. S. Nat. from Eu. Native also of northern Asia.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; FRANKLIN; ERIE; DELAWARE; ALLEGHENY.

2. *Sisymbrium altissimum* L. TALL SISYMBRIUM. (Man. p. 448; I. F. f. 1697.) In waste places, Quebec to Alberta, N. Y. and Mo. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON, Bethlehem; BUCKS; PHILADELPHIA.

8. *IODANTHUS* T. & G.

1. *Iodanthus pinnatifidus* (Michx.) Steud. PURPLE OR FALSE ROCKET. (Man. p. 451; I. F. f. 1712.) On river banks, western Pa. to Minn., Ky., La. and Tex.—*Pennsylvania*: ALLEGHENY.

9. *HESPERIS* L.

1. *Hesperis matronalis* L. DAME'S ROCKET OR VIOLET. (Man. p. 467; I. F. f. 1790.) In fields and along roadsides, escaped, Mass. to Pa. and Iowa. Nat. of Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; ALLEGHENY.

10. **STENOPHRAGMA** Celak.

1. *Stenophragma Thaliana* (L.) Celak. MOUSE-EAR OR THALE-CRESS. WALL-CRESS. (Man. p. 463; I. F. f. 1770.) In sandy fields and rocky places, Mass. and Ont. to Minn., Ga. and Mo.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; FRANKLIN; DELAWARE; ALLEGHENY.

11. **BARBAREA** R. Br.

Capsules slender-pedicelled, obtusely 4-angled: leaf-segments 3-9.

Capsules spreading or ascending.

1. *B. Barbarea*.

Capsules erect and appressed.

2. *B. stricta*.

Capsules stout-pedicelled, acutely 4-angled: leaf-segments 9-17.

3. *B. praecox*.

1. *Barbarea Barbarea* (L.) MacM. YELLOW ROCKET OR CRESS. (Man. p. 451; I. F. f. 1709.) In fields and waste places, Lab. to Va. and locally in the interior. Also on the Pacific coast. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONROE; CHESTER; LANCASTER; DELAWARE; ALLEGHENY.

2. *Barbarea stricta* Andrz. ERECT-FRUITED WINTER CRESS. Man. p. 451; I. F. f. 1710.) In fields and waste places, Quebec to the N. W. Terr., Fla. and N. Mex. In Eu. and Asia.—*Pennsylvania*: MONROE; NORTHAMPTON.

3. *Barbarea praecox* (J. E. Smith) R. Br. EARLY WINTER CRESS. (Man. p. 451; I. F. f. 1711.) In waste places, N. Y. and Pa. and southward. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS.

12. **ERYSIMUM** L.

1. *Erysimum cheiranthoides* L. WORM-SEED MUSTARD. (Man. p. 465; I. F. f. 1783.) Along streams and in fields, Newf. to N. J., west to the Pacific coast.—*Pennsylvania*: LANCASTER; DAUPHIN; LUZERNE.

13. **CONRINGIA** Link.

1. *Conringia orientalis* (L.) Dumort. HARE'S-EAR. TREACLE MUSTARD. (Man. p. 467; I. F. f. 1790a.) In waste places, Mich. to the N. W. Terr., and on the Atlantic coast from N. B. to Pa.—*Pennsylvania*: NORTHAMPTON, Bethlehem.

14. **SINAPIS** L.

1. *Sinapis alba* L. WHITE MUSTARD. (Man. p. 449; I. F. f. 1700.) In waste places and fields, mostly an escape. Adv. from Eu. Native also of western Asia.—*Pennsylvania*: NORTHAMPTON; DELAWARE.

15. **BRASSICA** L.

A. Upper leaf-blades merely sessile.

Pods erect or appressed, short-beaked, less than 2 cm. long: pedicels appressed.

1. *B. nigra*.

Pods more or less spreading, long-beaked, over 2 cm. long: pedicels not appressed.

Stem glabrous, more or less glaucous: pedicels over 6 mm. long at maturity.

Stem hispid: pedicels less than 5 mm. long at maturity.

B. Upper leaf-blades clasping.

2. *B. juncea*.

3. *B. arvensis*.

4. *B. campestris*.

1. *Brassica nigra* (L.) Koch. BLACK MUSTARD. (Man. p. 449; I. F. f. 1701.) In fields and waste places throughout northeastern U. S. Nat. from Eu. Native also of Central Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Brassica juncea* (L.) Cosson. INDIAN MUSTARD. (Man. p. 449; I. F. f. 1702.) In waste places, N. H. to Mich., Pa. and Va. Adv. and nat. from Asia.—*Pennsylvania*: NORTHAMPTON; TIOGA.

3. *Brassica arvensis* (L.) B.S.P. WILD MUSTARD. CHARLOCK. (Man. p. 450; I. F. f. 1703.) In fields and waste places. Adv. from Eu. and widely distributed.—*Pennsylvania*: NORTHAMPTON; LANCASTER.

4. *Brassica campestris* L.* TURNIP. (Man. p. 450; I. F. f. 1704.) In cult. grounds, fugitive from Eu.—*Pennsylvania*: NORTHAMPTON; ALLEGHENY.

16. RAPHANUS L.

Corolla yellow: pods 4-10-seeded, the valves longitudinally grooved.

1. *R. Raphanistrum*.

Corolla white or pink: pods 2-3-seeded, the valves not longitudinally grooved.

2. *R. sativus*.

1. *Raphanus Raphanistrum* L. WILD RADISH. (Man. p. 450; I. F. f. 1707.) In fields and waste places, N. B. and Ont. to Pa., also in B. C. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; DELAWARE; CHESTER.

2. *Raphanus sativus* L. GARDEN RADISH. (Man. p. 451; I. F. f. 1708.) Cult. and occasionally spontaneous. Native of Asia.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; CENTRE; ALLEGHENY.

17. RAPISTRUM Desv.

1. *Rapistrum rugosum* (L.) All. (Man. p. 460.) In waste places and on ballast, about seaports and rare inland. Introduced from Eu.—*Pennsylvania*: NORTHAMPTON, on old road College Hill; also on ballast.

18. CAKILE Gaertn.

1. *Cakile edentula* (Bigel.) Hook. AMERICAN SEA ROCKET. (Man. p. 448; I. F. f. 1699.) In sands of the seashore, Newf. to Fla. and along the Great Lakes to Minn.—*Pennsylvania*: ERIE, Presque Isle.

19. NESLIA Desv.

1. *Neslia paniculata* (L.) Desv. NESLIA. (Man. p. 459; I. F. f. 1754.) In waste places, Ont. to B. C. and in ballast about eastern seaports. Adv. or fugitive from Eu.—*Pennsylvania*: PHILADELPHIA, on ballast.

* *Brassica oleracea* L. (CABBAGE) has been found as an escape in Northampton County.

20. **ALYSSUM** L.

1. *Alyssum alyssoides* (L.) Gouan. YELLOW OR SMALL ALYSSUM. (Man. p. 466; I. F. f. 1787.) In fields, Ont. to N. J. and Iowa. Also in the far West. Nat. or adv. from Eu.—*Pennsylvania*: PIKE; NORTHAMPTON; ALLEGHENY.

21. **KONIGA** Adans.

1. *Koniga maritima* (L.) R.Br. SWEET ALYSSUM. (Man. p. 466; I. F. f. 1788.) In waste places, escaped. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON; LANCASTER.

22. **BERTEROA** DC.

1. *Berteroa incana* (L.) DC. HOARY ALYSSUM. (Man. p. 466; I. F. f. 1789.) In waste places, Me. to Mass., N. J. and Mo. Adv. or nat. from Eu.—*Pennsylvania*: PHILADELPHIA, ballast.

23. **DRABA** L.

Petals 2-cleft: pods elliptic to oblong-elliptic.

1. *D. verna*.

Petals entire: pods linear.

2. *D. Caroliniana*.

1. *Draba verna* L. VERNAL WHITLOW-GRASS. (Man. p. 460; I. F. f. 1755.) In fields, throughout northern U. S. Nat. from Eu. Also in B. C.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; DELAWARE; CHESTER; ALLEGHENY.

2. *Draba Caroliniana* Walt. CAROLINA WHITLOW-GRASS. (Man. p. 460; I. F. f. 1756.) In sandy fields, Mass. to Ont., Minn., Ga. and Ark.—*Pennsylvania*: BUCKS; LANCASTER.

24. **CARDAMINE** L.

Leaf-blades, at least those of cauline leaves, pinnately divided.

Stems scape-like: leaves basal or mainly so.

1. *C. hirsuta*.

Stems leafy.

Pods erect, less than 1 mm. broad.

Corolla 4 mm. wide or broader.

Sepals about 2 mm. long.

2. *C. Pennsylvanica*.

Sepals about 1 mm. long.

3. *C. arenicola*.

Corolla 3 mm. wide or narrower.

4. *C. parviflora*.

Pods spreading or ascending, over 1 mm. broad.

5. *C. flexuosa*.

Leaf-blades entire or undulate.

Stems erect from a tuberous base.

Corolla purple.

6. *C. purpurea*.

Corolla white.

7. *C. bulbosa*.

Stems decumbent from a creeping base.

8. *C. rotundifolia*.

1. *Cardamine hirsuta* L. HAIRY BITTER-CRESS. (Man. p. 454; I. F. f. 1725.) In moist places, Pa. to Mich. and N. C. Also in Eu. and Asia.—*Pennsylvania*: YORK, above Wrightsville.

2. *Cardamine Pennsylvanica* Muhl. PENNSYLVANIA BITTER-CRESS. (Man. p. 454; I. F. f. 1726.) In swamps and wet places, Newf. to Minn., Fla., Tenn. and Mo.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; FRANKLIN; LEBANON; SULLIVAN; CLARION; DELAWARE; ALLEGHENY.

3. *Cardamine arenicola* Britton. SAND BITTER-CRESS. (Man. p. 454; I. F. f. 1727.) In moist or wet sandy soil, Conn. to Fla., Ky. and Tenn.—*Pennsylvania*: LANCASTER; SAFE HARBOR.

4. *Cardamine parviflora* L. SMALL-FLOWERED BITTER-CRESS. (Man. p. 454; I. F. f. 1728.) On dry rocks, Quebec to western Ont. and Oregon, and in the Alleghenies to Ga. Also in northern Eu. and Asia.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS.

5. *Cardamine flexuosa* WITH. WOOD BITTER-CRESS. (Man. p. 454; I. F. f. 1729.) In wet woods, streams and mountain swamps, Me. to Mich., N. C. especially in the mountains. Also in Eu. and Asia, and apparently in Wash.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; SOMERSET.

6. *Cardamine purpurea* (Torr.) Britton. PURPLE CRESS. (Man. p. 455; I. F. f. 1732.) In cold springy places, Quebec and arctic Am. to the Canadian Rocky Mts., south to Md. and Wis.—*Pennsylvania*: YORK; FRANKLIN; HUNTINGDON; ALLEGHENY.

7. *Cardamine bulbosa* (Schreb.) B.S.P. BULBOUS CRESS. (Man. p. 455; I. F. f. 1733.) In wet meadows and thickets, N. S. to Minn., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; WYOMING; BUCKS; DELAWARE; CHESTER; LANCASTER; MERCER; ALLEGHENY.

8. *Cardamine rotundifolia* Michx. ROUND-LEAVED WATER-CRESS; (Man. p. 455; I. F. f. 1734.) In cold springs, N. J. to Ohio, N. C. and Ky.—*Pennsylvania*: DELAWARE.

25. DENTARIA L.

Blades of basal and stem-leaves similar.

Rootstocks tuberous, moniliform, not scaly: leaf-segments laciniate or lobed.

Leaf-segments oblong to lanceolate.

1. *D. laciniata*.

Leaf-segments ovate.

2. *D. maxima*.

Rootstocks elongated, continuous, scaly: leaf-segments toothed or incised.

3. *D. diphylla*.

Blades of basal and stem-leaves very dissimilar.

4. *D. heterophylla*.

1. *Dentaria laciniata* Muhl. CUT-LEAVED TOOTHWORT. (Man. p. 455; I. F. f. 1735.) In moist or rich woods, Quebec, Minn., Fla. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; FRANKLIN; SUSQUEHANNA; VENANGO; ERIE; DELAWARE.

2. *Dentaria maxima* Nutt. LARGE TOOTHWORT. (Man. p. 456; I. F. f. 1737.) In woods, Vt. to N. Y. and Pa.—*Pennsylvania*: ALLEGHENY.

3. *Dentaria diphylla* Michx. TWO-LEAVED TOOTHWORT. (Man. p. 456; I. F. f. 1736.) In rich woods and meadows, N. S. and N. B. to Minn., S. C. and Ky.—*Pennsylvania*: MONROE; BUCKS; HUNTINGDON; BLAIR; SULLIVAN; SOMERSET; WESTMORELAND; VENANGO; ERIE.

4. *Dentaria heterophylla* Nutt. SLENDER TOOTHWORT. (Man. p. 456; I. F. f. 1738.) In low woods, N. J. and Pa., and along the mountains to Ga. and Tenn.—*Pennsylvania*: ADAMS; PHILADELPHIA; CHESTER; HUNTINGDON; BLAIR; CAMBRIA; FRANKLIN; SOMERSET; ALLEGHENY.

26. ARABIS L.

Basal leaves with pinnatifid blades.

1. *A. lyrata*.

Basal leaves with toothed blades.

2. *A. dentata*.

Seeds wingless.

Seeds winged or margined.

Capsules erect or nearly so, sometimes appressed.

Corollas over 7 mm. broad : capsules not appressed : style 1 mm. long.

3. *A. patens*.

Corollas less than 7 mm. broad : capsules appressed : stigma sessile.

Seeds in 1 row in each cavity of the pod : stem pubescent.

4. *A. hirsuta*.

Seeds in 2 rows in each cavity of the pod : stem glabrous.

5. *A. glabra*.

Capsules recurved.

Plants glabrous, glaucous : pods 1-2 mm. wide.

6. *A. laevigata*.

Plants pubescent, at least below : pods 2.5-3.5 mm. wide.

7. *A. Canadensis*.

1. *Arabis lyrata* L. LYRE-LEAVED ROCK-CRESS. (Man. p. 463; I. F. f. 1772.) Rocky or sandy places, Ont. to Man., Va., Ky. and Mo. Also in Japan.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; CHESTER; LANCASTER; DAUPHIN; HUNTINGDON; DELAWARE; ALLEGHENY.

2. *Arabis dentata* T. & G. TOOTHED ROCK-CRESS. (Man. p. 464; I. F. f. 1774.) In woods or on banks, western N. Y. to Minn., Tenn. and Mo.—*Pennsylvania*: LUZERNE; ALLEGHENY.

3. *Arabis patens* Sulliv. SPREADING ROCK-CRESS. (Man. p. 464; I. F. f. 1776.) On shaded banks, Pa. to Minn., Ala. and Mo.—*Pennsylvania*: MONTGOMERY; BERKS; CHESTER; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON.

4. *Arabis hirsuta* (L.) Scop. HAIRY ROCK-CRESS. (Man. p. 464; I. F. f. 1777.) In rocky places, N. B. to B. C., the mountains of Ga., Ariz. and Calif. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; LANCASTER; CHESTER.

5. *Arabis glabra* (L.) Bernh. TOWER MUSTARD. (Man. p. 465; I. F. f. 1781.) In fields and rocky places, Quebec to Pa. and the Pacific Coast. Also in Eu. and Asia.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; WAYNE; TIOGA; FRANKLIN; ALLEGHENY.

6. *Arabis laevigata* (Muhl.) Poir. SMOOTH ROCK-CRESS. (Man. p. 464; I. F. f. 1778.) In rocky woods, Quebec to Minn., Ga. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY; DELAWARE.

6a. *A. laevigata* Burkil Porter. (Man. p. 464.) DAUPHIN; FRANKLIN; WESTMORELAND.

7. *Arabis Canadensis* L. SICKLE-POD. (Man. p. 464; I. F. f. 1779.) In woods, Ont. to Minn., Ga., Ark. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; LUZERNE; SOMERSET; DELAWARE; ALLEGHENY.

27. SOPHIA Adans.

Pods narrowly linear, 15-25 mm. long, 1 mm. wide, curved upward: seeds in 1 row.

Pods oblong, 6-8 mm. long, straight: seeds in 2 rows.

1. *S. Sophia*.

2. *S. pinnata*.

1. **Sophia Sophia** (L.) Britton. HERB-SOPHIA. FLIXWEED. (Man. p. 462; I. F. f. 1766.) In waste places, N. B. to Ont., N. Y. and Ill. Nat. from Eu. Native also of Asia.—*Pennsylvania*: PHILADELPHIA, ballast.

2. **Sophia pinnata** (Walt.) Britton. TANSY-MUSTARD. (Man. p. 462; I. F. f. 1767.) In dry soil, Va. to Fla. and Tex.—*Pennsylvania*: PHILADELPHIA, ballast.

28. DIPLLOTAXIS DC.

1. **Diplotaxis tenuifolia** (L.) DC. WALL ROCKET. (Man. p. 450; I. F. f. 1705.) In waste places and on ballast, N. S. to N. J. and Pa.—*Pennsylvania*: PHILADELPHIA, on ballast.

29. LUNARIA L.

1. **Lunaria annua** L. HONESTY. (Man. p. 456; I. F. f. 1740.) Nat. from Eu. in Conn. and Pa.—*Pennsylvania*: BUCKS, Nockamixon.

FAMILY 4. **CAPPARIDACEAE** Lindl. CAPER FAMILY.

Receptacle elevated or elongated.

1. CLEOME.

Receptacle neither elevated nor elongated, with or without an appendage.

Appendage wanting: filaments united below and adnate to the stipe of the ovary.

2. PEDICELLARIA.

Appendage present: filaments distinct.

3. POLANISIA.

1. CLEOME L.

1. **Cleome spinosa** L. SPIDER-FLOWER. (Man. p. 468; I. F. f. 1792.) In waste places, N. Y. to Ill., Fla. and La.—*Pennsylvania*: PHILADELPHIA; ALLEGHENY.

2. PEDICELLARIA Schrank.

1. **Pedicellaria pentaphylla** (L.) Schrank. Locally introduced into waste places in the eastern U. S. from tropical America and the Old World.—*Pennsylvania*: PHILADELPHIA, on the Schuylkill.

3. POLANISIA Raf.

1. **Polanisia graveolens** Raf. CLAMMY-WEED. (Man. p. 468; I. F. f. 1796.) Sandy and gravelly shores, western Quebec to the N. W. Terr., Pa., Kans. and Colo.—*Pennsylvania*: YORK; LANCASTER; DAUPHIN; COLUMBIA; LUZERNE; BRADFORD.

FAMILY 5. **RESEDACEAE** S. F. Gray. MIGNONETTE FAMILY.**1. RESEDA** L.

Leaf-blades entire: upper petals lobed, the lower entire.

1. *R. Luteola*.

Leaf-blades lobed or pinnatifid: petals, except sometimes the lowest, cleft or divided.

Corolla greenish yellow: 3 or 4 petals irregularly cleft. 2. *R. lutea*.

Corolla white: all the petals 3-cleft at the top. 3. *R. alba*.

1. *Reseda Luteola* L. DYER'S ROCKET. (Man. p. 469; I. F. f. 1798.) In waste places, N. Y. and Pa., and in ballast about the seaports. Adv. from Eu.—*Pennsylvania*: BUCKS; PHILADELPHIA.

2. *Reseda lutea* L. YELLOW CUT-LEAVED MIGNONETTE. (Man. p. 469; I. F. f. 1799.) In waste places, Mass. to N. J. and Mich. and in ballast about the seaports. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA, on ballast.

3. *Reseda alba* L. WHITE CUT-LEAVED MIGNONETTE. (Man. p. 469; I. F. f. 1800.) In waste places, N. Y., Ohio, in ballast about the eastern seaports and in B. C. Adv. from southern Eu.—*Pennsylvania*: PHILADELPHIA, on ballast.

Order 13. SARRACENIALES.

Ovary 3-5-celled, with central placentae, surmounted by a peltate disk: leaves with hollow blades. Fam. 1. SARRACENIACEAE.

Ovary 1-celled, with a basal or parietal placenta, not surmounted by a peltate disk: leaves with filiform or dilated blades. Fam. 2. DROSERACEAE.

FAMILY 1. SARRACENIACEAE La Pyl. PITCHER-PLANT FAMILY.

1. SARRACENIA L.

1. *Sarracenia purpurea* L. PITCHER-PLANT. SIDE-SADDLE FLOWER. (Man. p. 470; I. F. f. 1801.) In peat-bogs, Lab. to the Canadian Rocky Mts., Fla., Ky. and Minn.—*Pennsylvania*: PIKE; MONROE; LACKAWANNA; SUSQUEHANNA; TIOGA; CENTRE, Bear Meadows; LANCASTER; ERIE.

FAMILY 2. DROSERACEAE S. F. Gray. SUNDEW FAMILY.

1. DROSERA L.

Leaf-blades suborbicular or broader than long.

1. *D. rotundifolia*.

Leaf-blades linear-spatulate.

2. *D. intermedia*.

1. *Drosera rotundifolia* L. ROUND-LEAVED SUNDEW. (Man. p. 471; I. F. f. 1803.) In bogs or wet sand, Lab. to Alaska, Fla. and Ala., and in the Sierra Nevada to Calif. Also in Eu. and Asia.—*Pennsylvania*: LACKAWANNA; MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; CHESTER; FRANKLIN; HUNTINGDON; LANCASTER; CENTRE; CRAWFORD; VENANGO; ERIE; DELAWARE.

2. *Drosera intermedia* Hayne. SPATULATE-LEAVED SUNDEW. (Man. p. 471; I. F. f. 1804.) In bogs, Anticosti and N. B. to Man., Fla. and La.—*Pennsylvania*: MONROE; CARBON; LUZERNE; BUCKS; BRADFORD.

Order 14. ROSALES.

Aquatic alga-like fleshy herbs, with spathe-like involucre: perianth wanting.

Fam. 1. PODOSTEMACEAE.

Terrestrial or swamp plants, without spathe-like involucre: perianth present, except in *Liquidambar*.

Endosperm present, usually copious and fleshy : stipules mostly wanting.

Herbs.

Carpels as many as the sepals : stamens as many as the sepals or twice as many.

Plants succulent : carpels distinct or united at the base, opening lengthwise. Fam. 2. CRASSULACEAE.

Plants not succulent : carpels united to the middle, circumscissile.

Fam. 3. PENTHORACEAE.

Carpels fewer than the sepals.

Staminodia present : carpels 3-4, wholly united into a 1-celled gynoecium. Fam. 4. PARNASSIACEAE.

Staminodia wanting : carpels mostly 2, distinct or partially united.

Fam. 5. SAXIFRAGACEAE.

Shrubs or trees.

Leaves opposite.

Fam. 6. HYDRANGIACEAE.

Leaves alternate.

Fruit a 2-celled capsule.

Capsule thin-walled, almost free from the hypanthium.

Fam. 7. ITEACEAE.

Capsule woody or thick-walled, manifestly adnate to the hypanthium,

Fam. 8. HAMAMELIDACEAE.

Fruit a 1-celled berry.

Fam. 9. GROSSULARIACEAE.

Endosperm wanting or scant (copious in *Opulaster*, ROSACEAE) : stipules mostly present.

Flowers monoecious, in dense capitate clusters.

Fam. 10. PLATANACEAE.

Flowers perfect, or if monoecious or dioecious not in capitate clusters.

Flowers regular.

Carpels several or numerous, or if solitary becoming an achene.

Carpels distinct, rarely adnate to the hypanthium : fruit achenes or follicles. Fam. 11. ROSACEAE.

Carpels united, enclosed by the hypanthium and adnate to it : fruit a pome. Fam. 12. POMACEAE.

Carpel solitary, not becoming an achene.

Ovary with 2 ovules : leaf-blades simple : fruit a drupe.

Fam. 13. DRUPACEAE.

Ovary with several ovules : leaf-blades 2-3-pinnate : fruit a legume.

Fam. 14. CAESALPINIACEAE.

Flowers irregular (nearly or quite regular in *Gleditsia* and *Gymnocladus* of the CAESALPINIACEAE).

Upper petal enclosed by the lateral ones in the bud.

Fam. 14. CAESALPINIACEAE.

Upper petal enclosing the lateral ones in the bud.

Fam. 15. PAPILIONACEAE.

FAMILY I. **PODOSTEMACEAE** Lindl. RIVER-WEED FAMILY.

1. **PODOSTEMON** Michx.

1. **Podostemon Ceratophyllum** Michx. RIVER-WEED. (Man. p. 472 ; I. F. f. 1808.) In shallow streams, Mass. to Ont., Minn., Ga. and Ala. —*Pennsylvania* : PIKE ; MONROE ; NORTHAMPTON ; CHESTER ; LANCASTER, Tucquan Island ; DELAWARE.

FAMILY 2. CRASSULACEAE DC. STONE-CROP FAMILY.

Stamens as many as there are sepals.

1. TILLAEA.

Stamens twice as many as there are sepals.

2. SEDUM.

1. TILLAEA L.

1. *Tillaea aquatica* L. PIGMY-WEED. (Man. p. 473 ; I. F. f. 1809.)
Muddy banks of streams, N. S. to Md. mainly near the coast. Also in
Eu.—*Pennsylvania* : PHILADELPHIA.

2. SEDUM L.

Leaves of the flowering stems with flat blades.

Relatively tall plants, with erect stems.

Flowers dioecious : sepals and petals mostly 4 : corolla yellowish green.

1. *S. roseum*.

Flowers perfect : sepals and petals 5 : corolla white, pink or purple.

Corolla purple : petals twice as long as the sepals. 2. *S. Telephium*.

Corolla white or pink : petals 3-4 times as long as the sepals.

3. *S. telephioides*.Relatively low plants, with decumbent or creeping stems. 4. *S. ternatum*.Leaves of the flowering stems as thick as broad or nearly so. 5. *S. acre*.

1. *Sedum roseum* (L.) Scop. ROSEROOT. ROSEWORT. (Man. p. 474 ; I. F. f. 1810.) In rocky places, Lab. to Me. and Pa. Also in
Eu. and Asia.—*Pennsylvania* : BUCKS, Nockamixon Rocks ; WAYNE, on
high cliff off Pt. Jarvis.

2. *Sedum Telephium* L. ORPINE. LIVE-FOREVER. (Man. p. 474 ;
I. F. f. 1811.) In fields and along roadsides, Quebec to Ont., Md. and
Mich. Nat. from Eu. and native of western Asia.—*Pennsylvania* : MON-
ROE ; NORTHAMPTON ; BUCKS ; LANCASTER.

3. *Sedum telephioides* Michx. AMERICAN ORPINE. (Man. p. 474 ;
I. F. f. 1812.) On dry rocks, Pa. to western N. Y., Ind., N. C. and Ga.
—*Pennsylvania* : NORTHAMPTON (Schweinitz List) ; FULTON.

4. *Sedum ternatum* Michx. WILD STONECROP. (Man. p. 474 ; I.
F. f. 1818.) On rocks, N. Y. to Ind., Ga. and Tenn.—*Pennsylvania* :
CHESTER ; YORK ; LANCASTER ; MONROE (Tannersville) ; PERRY ;
DAUPHIN ; HUNTINGDON ; VENANGO ; ERIE ; ALLEGHENY.

5. *Sedum acre* L. WALL-PEPPER. MOSSY STONECROP. (Man. p.
474 ; I. F. f. 1813.) On rocks and along roadsides, N. B. to Ont., and
Pa. Nat. from Eu. and Asia.—*Pennsylvania* : NORTHAMPTON ; PHILA-
DELPHIA ; COLUMBIA ; CLINTON.

FAMILY 3. PENTHORACEAE Rydb. VIRGINIA STONECROP FAMILY.

1. PENTHORUM L.

1. *Penthorum sedoides* L. DITCH OR VIRGINIA STONECROP. (Man.
p. 475 ; I. F. f. 1821.) In ditches and swamps, N. B. to Minn., Fla. and
Tex.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; CHESTER ; LANCASTER ;
SCHUYLKILL ; DELAWARE ; ERIE ; ALLEGHENY.

FAM. 4. **PARNASSIACEAE** Dumort. GRASS-OF-PARNASSUS FAMILY.1. **PARNASSIA** L.

1. *Parnassia Caroliniana* Michx. CAROLINA GRASS-OF-PARNASSUS. (Man. p. 476; I. F. f. 1852.) In swamps and low meadows, N. B. to Man., Va., Ill. and Iowa.—*Pennsylvania*: NORTHAMPTON; BUCKS; ERIE, Presque Isle.

FAMILY 5. **SAXIFRAGACEAE** Dumort. SAXIFRAGE FAMILY.

Capsules 2-celled: placentae axile.

1. **SAXIFRAGA**.

Capsules 1-celled: placentae basal or parietal.

Placentae basal.

2. **TIARELLA**.

Placentae parietal.

Petals present: terrestrial plants.

Stamens 5: petals entire.

3. **HEUCHERA**.

Stamens 10: petals pinnatifid.

4. **MITELLA**.

Petals wanting: aquatic plants.

5. **CHRYSOSPLENIUM**.1. **SAXIFRAGA** L.

Filaments clavate.

1. *S. micranthidifolia*.

Filaments subulate.

Scapes less than 3.5 dm. tall: leaf-blades short: cymules becoming raceme-like.

2. *S. Virginensis*.

Scapes over 4 dm. tall: leaf-blades elongated: cymules compact.

3. *S. Pennsylvanica*.

1. *Saxifraga micranthidifolia* (Haw.) B.S.P. LETTUCE SAXIFRAGE. (Man. p. 479; I. F. f. 1832.) In cold brooks, Pa., and along the mountains to N. C.—*Pennsylvania*: NORTHAMPTON; SOMERSET, Laurel Hill.

2. *Saxifraga Virginensis* Michx. EARLY SAXIFRAGE. (Man. p. 479; I. F. f. 1833.) In dry and rocky woodlands, N. B. to Minn., Ga. and Tenn.—*Pennsylvania*: NORTHAMPTON; MONROE; BUCKS; CHESTER; LANCASTER; HUNTINGDON; DELAWARE; ALLEGHENY.

3. *Saxifraga Pennsylvanica* L. PENNSYLVANIA OR SWAMP SAXIFRAGE. (Man. p. 479; I. F. f. 1831.) In swamps and on wet banks, Me. to Minn., Va. and Mo.—*Pennsylvania*: NORTHAMPTON; MONROE; LANCASTER; BUCKS; CHESTER; LEBANON; FRANKLIN; HUNTINGDON; SOMERSET; DELAWARE; ALLEGHENY.

2. **TIARELLA** L.

1. *Tiarella cordifolia* L. COOLWORT. FALSE MITREWORT. (Man. p. 480; I. F. f. 1842.) In rich, moist woods, N. S. to Ont., Minn., and especially along the mountains to Ga., Ind. and Mich.—*Pennsylvania*: DELAWARE; MONROE; WAYNE; TIOGA; SULLIVAN; BLAIR; ARMSTRONG; FAYETTE; SOMERSET; ERIE; ALLEGHENY.

3. **HEUCHERA** L.

Flower-stalks leafless.

1. *H. Americana*.

Flower-stalks leafy.

a. Hypanthium turbinate: stamens slightly if at all surpassing the petals.

2. *H. pubescens*.

b. Hypanthium campanulate : stamens about twice as long as the petals.

3. *H. roseola*.

1. *Heuchera Americana* L. ALUM-ROOT. (Man. p. 482; I. F. f. 1845.) In dry or rocky woods, Ont. to Conn., Minn., Ala. and La.—*Pennsylvania* : MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY; HUNTINGDON; DELAWARE.

2. *Heuchera pubescens* Pursh. DOWNY HEUCHERA. (Man. p. 481; I. F. f. 1846.) In rich woods, mountains of Pa. to Kans. and N. C.—*Pennsylvania* : LANCASTER; PERRY; UNION; FRANKLIN; HUNTINGDON; FAYETTE.

3. *Heuchera roseola* Rydb. PINK HEUCHERA. (Man. p. 481.) In woods, Pa. and Va.—*Pennsylvania* : YORK, York Furnace.

4. MITELLA L.

Scape bearing 2 opposite bracts : basal leaves with ovate blades.

1. *M. diphylla*.

Scape bearing one bract or this obsolete : basal leaves with reniform or orbicular blades.

2. *M. nuda*.

1. *Mitella diphylla* L. TWO-LEAVED BISHOP'S CAP OR MITREWORT. (Man. p. 483; I. F. f. 1848.) In rich woods, Quebec to Minn., N. C. and Mo.—*Pennsylvania* : MONROE; NORTHAMPTON; BUCKS; PIKE; CHESTER; LANCASTER; YORK; TIOGA; FRANKLIN; LACKAWANNA; SOMERSET; ERIE; DELAWARE; ALLEGHENY.

2. *Mitella nuda* L. NAKED BISHOP'S CAP OR MITREWORT. (Man. p. 483; I. F. f. 1849.) In cold woods and peat bogs, Newf. and Lab. to the Pacific coast, Pa., Mich., and in the Canadian Rocky Mts.—*Pennsylvania* : WAYNE; MONROE, Tobyhanna Mills.

5. CHRYSOSPLENIUM L.

1. *Chrysosplenium Americanum* Schw. GOLDEN SAXIFRAGE. WATER CARPET. (Man. p. 483; I. F. f. 1850.) In wet, shaded places, N. S. to Saskatchewan, along the mountains to Ga. and to Ohio and Minn.—*Pennsylvania* : PIKE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; YORK; FRANKLIN; CENTRE; DELAWARE; ALLEGHENY.

FAMILY 6. HYDRANGEACEAE Dumort. HYDRANGEA FAMILY.

Stamens 8-12.

1. HYDRANGEA.

Stamens 20-40.

2. PHILADELPHUS.

1. HYDRANGEA L.

1. *Hydrangea arborescens* L. WILD HYDRANGEA. (Man. p. 484; I. F. f. 1858.) On rocky stream or river banks, N. Y. to Iowa, Fla. and Mo.—*Pennsylvania* : NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; YORK; PERRY; TIOGA; LUZERNE; SOMERSET; ALLEGHENY.

2. PHILADELPHUS L.

1. *Philadelphus inodorus* L. SCENTLESS SYRINGA. (Man. p. 485; I. F. f. 1861.) In thickets, Va. to Ala. and Ga., principally in the moun-

tains. Nat. in Pa.—*Pennsylvania*: NORTHAMPTON, Easton, escaped; ALLEGHENY.

FAMILY 7. **ITEACEAE** Agardh. ITEA FAMILY.

1. **ITEA** L.

1. *Itea Virginica* L. VIRGINIA WILLOW. (Man. p. 485; I. F. f. 1864.) In wet places, N. J. and eastern Pa. to Fla. and La.—*Pennsylvania*: CUMBERLAND, on the Susquehanna.

FAMILY 8. **HAMAMELIDACEAE** Lindl. WITCH-HAZEL FAMILY.

Calyx and corolla present: ovule solitary in each cavity, pendulous.

1. **HAMAMELIS**.

Calyx and corolla wanting: ovules several or many in each cavity, horizontal.

2. **LIQUIDAMBAR**.

1. **HAMAMELIS** L.

1. *Hamamelis Virginiana* L. WITCH-HAZEL. (Man. p. 489; I. F. f. 1879.) In low woods, N. B. and N. S. to Ont., Minn., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; LEBANON; PHILADELPHIA; FRANKLIN; SOMERSET; ERIE; DELAWARE; ALLEGHENY.

2. **LIQUIDAMBAR** L.

1. *Liquidambar Styraciflua* L. SWEET GUM. (Man. p. 489; I. F. f. 1880.) In low woods, Conn. to Mo., Fla. and Mex.—*Pennsylvania*: BUCKS; PHILADELPHIA; DELAWARE.

FAMILY 9. **GROSSULARIACEAE** Dumort. GOOSEBERRY FAMILY.

1. **RIBES** L.

Plants armed with firm spines: peduncles 1-3-flowered (*gooseberries*).

Calyx-lobes shorter than the limb: berry prickly. 1. *R. Cynosbati*.

Calyx-lobes longer than the limb: berry smooth and glabrous:

Calyx-lobes shorter than the tube and hypanthium: stamens not long-exserted.

Calyx-lobes oblong, as long as the stamens.

Peduncles normally 1-flowered: stems usually with 3 spines together. 2. *R. Uva-crispa*.

Peduncles normally 2-flowered: stems with small or obsolete spines.

3. *R. oxycanthoides*.

Calyx-lobes linear, shorter than the stamens. 4. *R. rotundifolium*.

Calyx-lobes much longer than the limb and hypanthium: stamens long-exserted. 5. *R. Missouriense*.

Plants unarmed (or in *R. lacustre* with spines and numerous bristles): peduncles many-flowered (*currants*).

Berries bristly.

Stem bristly and spiny.

6. *R. lacustre*.

Stem smooth and glabrous.

7. *R. prostratum*.

Berries smooth and glabrous.

Hypanthium tubular: sepals narrow: berry black. 8. *R. floridum*.

Hypanthium campanulate: sepals broad: berry red. 9. *R. rubrum*.

1. *Ribes Cynosbati* L. WILD GOOSEBERRY. (Man. p. 486; I. F. f. 1865.) In rocky woods, N. B. to Man. and Mo., and along the Alleghenies to N. C.—*Pennsylvania*: MONROE; HUNTINGDON; WESTMORELAND; FAYETTE.

2. *Ribes Uva-crispa* L. GARDEN GOOSEBERRY. (Man. p. 487; I. F. f. 1870.) Along roadsides in N. J., Pa. and N. Y., escaped from gardens. Native of Eu. and Asia.—*Pennsylvania*: NORTHAMPTON, escaped; ALLEGHENY.

3. *Ribes oxyacanthoides* L. NORTHERN GOOSEBERRY. (Man. p. 487; I. F. f. 1868.) In wet woods and low grounds, Newf. to B. C., to N. J., Ohio, Mich. and in the Rocky Mts. to Utah and Colo.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER; BLAIR.

4. *Ribes rotundifolium* Michx. EASTERN WILD GOOSEBERRY. (Man. p. 487; I. F. f. 1869.) In rocky woods, Mass. to N. C., especially along the mountains.—*Pennsylvania*: WAYNE; BUCKS; SCHUYLKILL; COLUMBIA; FULTON; CENTRE; CAMBRIA.

5. *Ribes Missouriense* Nutt. MISSOURI GOOSEBERRY. (Man. p. 487; I. F. f. 1867.) In dry or rocky soil, Minn., Mich., Ill. and Pa. to Tenn. and Tex.—*Pennsylvania*: SCHUYLKILL; COLUMBIA.

6. *Ribes lacustre* (Pers.) Poir. SWAMP GOOSEBERRY. (Man. p. 487; I. F. f. 1871.) In swamps and wet woods, Newf. to B. C., Pa., and Wash.—*Pennsylvania*: DAUPHIN; SCHUYLKILL; TIOGA; HUNTINGDON; SOMERSET.

7. *Ribes prostratum* L'Her. FETID CURRANT. (Man. p. 488; I. F. f. 1872.) In cold wet places, Lab. to B. C., especially along the mountains to N. C., Mich., and in the Rocky Mts. to Colo.—*Pennsylvania*: MONROE; HUNTINGDON; CLEARFIELD.

8. *Ribes floridum* L'Her. WILD BLACK CURRANT. (Man. p. 488; I. F. f. 1874.) In woods, N. S. to Man., Va., Iowa and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LUZERNE; HUNTINGDON; WESTMORELAND; ALLEGHENY.

9. *Ribes rubrum* L. RED CURRANT. (Man. p. 488; I. F. f. 1875.) In cold woods, Lab. to Alaska, N. J., Ind. and Minn., freely escaping. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; LEHIGH; YORK; LEBANON; WESTMORELAND; ERIE; ALLEGHENY.

FAMILY 10. PLATANACEAE Lindl. PLANE-TREE FAMILY.

1. PLATANUS L.

1. *Platanus occidentalis* L. BUTTON-WOOD. PLANE-TREE. (Man. p. 490; I. F. f. 1881.) Along streams and in wet woods, Me. to Minn., Fla. and Tex.—*Pennsylvania*: MONROE; BUCKS; NORTHAMPTON; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; DELAWARE; ALLEGHENY.

FAMILY 11. ROSACEAE B. Juss. ROSE FAMILY.

A. Fruit not enclosed in a depressed or hollow hypanthium.

a. Pistils few, rarely more than 5, maturing into 2-4-seeded follicles.

Follicles opening along both sutures: seeds shining. 1. OPULASTER.

Follicles opening along one suture : seeds dull or granular.

Pistils alternating with the sepals.

Flowers perfect : shrubs with simple leaf-blades. 2. SPIRAEA.

Flowers dioecious : herbs with 2-3-pinnate leaf-blades.

3. ARUNCUS.

Pistils opposite the sepals.

Follicles united at the base : leaf-blades pinnate : petals short.

4. SORBARIA.

Follicles distinct : leaf-blades 3-foliolate : petals elongated.

5. PORTERANTHUS.

b. Pistils numerous or rarely few, maturing into achenes or 1-2-seeded drupelets.

Pistils ripening into drupelets crowded on a receptacle.

Drupelets very juicy : fruit not in the calyx.

6. RUBUS.

Drupelets dry : fruit enclosed in the calyx.

7. DALIBARDA.

Pistils ripening into achenes.

Style deciduous.

Style basal.

8. DRYMOCALLIS.

Style lateral.

Achenes pubescent : low shrubs.

Style club-shaped : corolla yellow : leaf-blades pinnate.

9. DASIPHORA.

Style filiform : corolla white : leaf-blades palmate.

10. SIBBALDIOPSIS.

Achenes glabrous : herbs.

Receptacle pulpy, edible : petals white.

11. FRAGARIA.

Receptacle neither pulpy nor edible : petals yellow or red.

Leaf-blades 3-foliolate.

12. DUCHESNEA.

Leaf-blades several-foliolate.

Corolla red.

13. COMARUM.

Corolla yellow.

14. ARGENTINA.

Style terminal or nearly so.

Pistils numerous : ovules pendulous : plants caulescent.

15. POTENTILLA.

Pistils 2-6 : ovules erect : plants acaulescent.

16. WALDSTEINIA.

Style persistent on the achene.

Pistils numerous.

17. GEUM.

Pistils 5-15, at maturity resembling follicles but indehiscent.

18. ULMARIA.

B. Fruit consisting of several achenes enclosed in the persistent hypanthium.

Achenes 1-4 within the dry hypanthium.

Receptacle bearing hooked prickles : petals 5.

19. AGRIMONIA.

Receptacle without prickles : petals wanting.

20. SANGUISORBA.

Achenes numerous, within the fleshy hypanthium.

21. ROSA.

1. OPULASTER Medic.

1. *Opulaster opulifolius* (L.) Kuntze. NINEBARK. (Man. p. 492; I. F. f. 1882.) On river banks and in rocky places, Quebec to Man., Ga. and Kans.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; CHESTER ; LANCASTER ; YORK ; COLUMBIA ; FULTON ; SOMERSET ; DELAWARE ; ALLEGHENY.

2. SPIRAEA L.

Inflorescence pyramidal.

Plant pubescent: follicles tomentose.

1. *S. tomentosa*.

Plant glabrous: follicles glabrous.

2. *S. salicifolia*.

Inflorescence corymbose.

Stem, leaves and inflorescence glabrous, or the latter with a few hairs.

3. *S. corymbosa*.

Stem, leaves and inflorescence pubescent.

4. *S. Japonica*.

1. *Spiraea tomentosa* L. HARDHACK. STEEPLE-BUSH. (Man. p. 492; I. F. f. 1884.) In swamps and low grounds, N. S. to Man., Ga. and Kans.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; LANCASTER; LUZERNE; ALLEGHENY.

2. *Spiraea salicifolia* L. WILLOW-LEAVED OR AMERICAN MEADOW-SWEET. (Man. p. 492; I. F. f. 1883.) In swamps or moist grounds, Newf. to the Rocky Mts., Ga. and Mo.—*Pennsylvania*: LACKAWANNA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; LUZERNE; BLAIR; ALLEGHENY.

2a. *S. salicifolia latifolia* (Ait.) Wiegand. BUCKS.

3. *Spiraea corymbosa* Raf. CORYMBED SPIRAEA. (Man. p. 492; I. F. f. 1885.) On banks or in rocky places, mountains of Pa. and N. J. to Ga.—*Pennsylvania*: FULTON, Buck's Valley.

4. *Spiraea Japonica* L. f. JAPANESE SPIRAEA. (Man. p. 492.) Native of Japan. Adv. or nat.—*Pennsylvania*: CARBON; BUCKS.

3. ARUNCUS Adans.

1. *Aruncus Aruncus* (L.) Karst. GOAT'S-BEARD. (Man. p. 493; I. F. f. 1887.) In rich woods, Pa. to Iowa, Ga. and Mo. Also from Ore. to Alaska.—*Pennsylvania*: HUNTINGDON; SOMERSET; FAYETTE; ALLEGHENY; ARMSTRONG.

4. SORBARIA A. Br.

1. *Sorbaria sorbifolia* (L.) A. Br. MOUNTAIN ASH SPIRAEA. (Man. p. 493.) Native of Siberia. Adv. or nat. in the U. S.—*Pennsylvania*: ALLEGHENY.

5. PORTERANTHUS Britton.

Lower leaflets serrate: stipules subulate or linear-lanceolate, entire or nearly so.

1. *P. trifolius*.

Lower leaflets incised-pinnatifid: stipules leaf-like, incised or serrate.

2. *P. stipulatus*.

1. *Porteranthus trifolius* (L.) Britton. INDIAN PHYSIC. BOWMAN'S-ROOT. (Man. p. 493; I. F. f. 1888.) In woodlands, N. Y. to Mich., Ga. and Mo.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; CHESTER; FRANKLIN; UNION; CENTRE; SOMERSET; DELAWARE; ALLEGHENY.

2. *Porteranthus stipulatus* (Muhl.) Britton. AMERICAN IPECAC. (Man. p. 493; I. F. f. 1889.) In woods, N. Y. to Kans., Ala., La. and the I. Terr.—*Pennsylvania*: ALLEGHENY.

6. RUBUS L.

Receptacle flat: ovary pubescent above: drupelets crowned with a hairy cushion.

1. *R. odoratus*.

Receptacle convex or conic: ovary glabrous: drupelets glabrous.

Fruit falling away from the dry receptacle: petals erect.

Stems herbaceous, unarmed: leaflets green beneath.

2. *R. Americanus*.

Stems shrubby, armed: leaflets white beneath.

Stems prickly, glaucous: fruit purple-black, black or dark red.

Fruit purple-black or black: stem very glaucous. 3. *R. occidentalis*.

Fruit dark red: stem slightly glaucous.

4. *R. neglectus*.

Stems bristly, not glaucous: fruit light red.

5. *R. strigosus*.

Fruit persistent on a fleshy receptacle: petals spreading.

Leaflets with pinnatifid blades.

6. *R. laciniatus*.

Leaflets with toothed or incised blades.

Stems erect, ascending or recurved.

Leaf-blades white-woolly beneath.

7. *R. cuneifolius*.

Leaf-blades not white-woolly beneath.

Branches of the inflorescence and the petioles distinctly glandular-pubescent.

Fruit broadly oval or nearly spherical, very juicy.

8. *R. nigrobaccus*.

Fruit narrowly oblong or thimble-shaped, comparatively dry.

9. *R. Allegheniensis*.

Branches of the inflorescence and petioles villous, strigose or nearly glabrous, scarcely glandular.

Inflorescence copiously villous.

10. *R. frondosus*.

Inflorescence sparingly villous.

Plants low, almost herbaceous, weakly prickly.

11. *R. Randii*.

Plants tall and shrubby.

Plants strongly prickly: leaflets pubescent beneath, doubly serrate.

12. *R. argutus*.

Plants unarmed or with few weak prickles: leaflets glabrous beneath, singly serrate.

13. *R. Canadensis*.

Stems trailing, creeping or decumbent.

Stems merely prickly.

Inflorescence several- to many-flowered.

14. *R. procumbens*.

Inflorescence usually 1-2-flowered.

15. *R. Baileyanus*.

Stems bristly and prickly, sometimes merely bristly.

Flowering branches and petioles bristly or glabrous: terminal leaflets cuneate.

16. *R. hispidus*.

Flowering branches and petioles prickly: terminal leaflets oblong-elliptic.

17. *R. nigricans*.

1. *Rubus odoratus* L. PURPLE-FLOWERING RASPBERRY. (Man. p. 495; I. F. f. 1890.) In rocky woods, N. S. to Mich., Ga. and Tenn.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; MONTGOMERY; YORK; COLUMBIA; TIOGA; HUNTINGDON; ALLEGHENY.

2. *Rubus Americanus* (Pers.) Britton. DWARF RASPBERRY. (Man. p. 495; I. F. f. 1897.) In swamps, Newf. to Man., N. J. and Iowa.—

Pennsylvania: SUSQUEHANNA; SULLIVAN; MONROE; BUCKS; CLEAR-FIELD; ERIE; SOMERSET.

3. *Rubus occidentalis* L. BLACK-CAP. BLACK RASPBERRY. (Man. p. 496; I. F. f. 1896.) In woods or thickets, Quebec and Ont. to Ga.—*Pennsylvania*: PIKE; MONROE; BUCKS; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; DELAWARE; ALLEGHENY.

4. *Rubus neglectus* Peck. PURPLE WILD RASPBERRY. (Man. p. 496; I. F. f. 1895.) In dry or rocky soil, N. Eng. to Pa.—*Pennsylvania*: LACKAWANNA; MONROE.

5. *Rubus strigosus* Michx. WILD RED RASPBERRY. (Man. p. 496; I. F. f. 1894.) In dry or rocky situations, Newf. and Lab. to B. C. and in the Alleghenies to N. C. and in the Rocky Mts. to N. Mex.—*Pennsylvania*: PIKE; LACKAWANNA; MONROE; NORTHAMPTON; SCHUYLKILL; LANCASTER; YORK; FRANKLIN; TIOGA; CENTRE; ALLEGHENY.

6. *Rubus laciniatus* Willd. CUT-LEAVED BLACKBERRY. (Man. p. 496.) Nat. in N. Y. and Pa. Also in Ore. and Wash. Native of Eu. (?) —*Pennsylvania*: BUCKS, Pt. Pleasant.

7. *Rubus cuneifolius* Pursh. SAND BLACKBERRY. (Man. p. 496; I. F. f. 1901.) In sandy soil, Conn. to Mo., Fla. and La.—*Pennsylvania*: LANCASTER; CHESTER; BUCKS; DELAWARE.

8. *Rubus nigrobaccus* Bailey. HIGH BUSH BLACKBERRY. (Man. p. 496; I. F. f. 1898.) In dry soil, N. Eng. to Fla. and Ark.—*Pennsylvania*: HUNTINGDON; MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; MONTGOMERY; FRANKLIN; ALLEGHENY.

9. *Rubus Allegheniensis* Porter. MOUNTAIN BLACKBERRY. (Man. p. 496; I. F. f. 1899.) In dry soil, Ont. and N. Y. to Pa., perhaps to Va.—*Pennsylvania*: MONROE; CARBON; SCHUYLKILL.

10. *Rubus frondosus* Bigel. LEAFY-BRACTED BLACKBERRY. (Man. p. 497.) Prince Edward Island to Mich. and N. C.—*Pennsylvania*: DELAWARE.

11. *Rubus Randii* (Bailey) Rydb. RAND'S BLACKBERRY. (Man. p. 497.) Me. to Lake Superior and Va.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

12. *Rubus argutus* Link. TALL BLACKBERRY. (Man. p. 497.) In moist soil, Prince Edward Island to Ga. and Ala.—*Pennsylvania*: MONROE.

13. *Rubus Canadensis* L. MILLSPAUGH'S BLACKBERRY. (Man. p. 497; I. F. f. 1900.) In thickets or mountain woods, N. Eng. to Ga.—*Pennsylvania*: MONROE, Tobyhanna Mills.

14. *Rubus procumbens* Muhl. LOW RUNNING BLACKBERRY. DEWBERRY. (I. F. f. 1906; Man. p. 498.) In dry open soil, Newf. to Minn., N. C., La. and the I. Terr.—*Pennsylvania*: DELAWARE; LANCASTER; LEBANON.

15. *Rubus Baileyanus* Britton. BAILEY'S DEWBERRY. (Man. p. 498; I. F. f. 1905.) In dry woods and thickets, Me. to Va.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LANCASTER; DELAWARE.

16. *Rubus hispidus* L. HISPID OR RUNNING SWAMP BLACKBERRY. (Man. p. 498; I. F. f. 1902.) In swamps or low grounds, N. S. to Ont. and Minn., Ga. and Kans.—*Pennsylvania*: LACKAWANNA; MONROE; SCHUYLKILL; LUZERNE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; CHESTER; LANCASTER; FRANKLIN; DELAWARE; ALLEGHENY.

17. *Rubus nigricans* Rydb. BRISTLY BLACKBERRY. (Man. p. 498.) In moist soil, Newf. to Mich. and Pa.—*Pennsylvania*: MONROE, Naomi Pines; BUCKS; CLEARFIELD.

7. DALIBARDA L.

1. *Dalibarda repens* L. DALIBARDA. (Man. p. 499; I. F. f. 1907.) In woods, N. S. to Minn., N. J., Ohio and Mich.—*Pennsylvania*: MONROE; CARBON; SCHUYLKILL; LACKAWANNA; TIOGA; CAMBRIA; ERIE.

8. DRYMOCALLIS Fourr.

1. *Drymocallis arguta* (Pursh) Rydb. TALL OR GLANDULAR CINQUEFOIL. (Man. p. 499; I. F. f. 1913.) On dry or rocky hillsides, N. B. to the Rocky Mts., N. J., Ill. and Kans.—*Pennsylvania*: NORTHAMPTON; LANCASTER; ERIE; ALLEGHENY.

9. DASIPHORA Raf.

1. *Dasiphora fruticosa* (L.) Rydb. SHRUBBY CINQUEFOIL. (Man. p. 499; I. F. f. 1932.) In swamps or moist rocky places, Lab. and Greenland to Alaska, N. J., Ill. and in the Rocky Mts. to Ariz. and Calif. Also in Eu. and Asia.—*Pennsylvania*: MONROE; PIKE.

10. SIBBALDIOPSIS Rydb.

1. *Sibbaldiopsis tridentata* (Soland.) Rydb. THREE-TOOTHED CINQUEFOIL. (Man. p. 500; I. F. f. 1933.) In rocky places, especially on mountains, Greenland to N. J., on the higher southern Alleghenies, shores of Lake Superior and west to the Canadian Rocky Mts.—*Pennsylvania*: LACKAWANNA, summit of Bald Mt.

11. FRAGARIA L.

Achenes borne on the surface of the accrescent receptacle: leaflets sessile or essentially so.

Leaflets thickish: fruit mainly less than 15 mm. long: plants stout: naturalized species.

Leaflets thin: fruit mainly over 15 mm. long: plants slender: native species.

Achenes borne in pits in the accrescent receptacle: leaflets stalked.

3. *F. Virginiana*.

1. *Fragaria vesca* L. EUROPEAN WOOD STRAWBERRY. (Man. p. 501; I. F. f. 1910.) In fields and along roadsides. Nat. from Eu. in the

Eastern and Middle States.—*Pennsylvania*: NORTHAMPTON; BUCKS; TIOGA; SUSQUEHANNA; LANCASTER.

2. *Fragaria Americana* (Porter) Britton. AMERICAN WOOD STRAWBERRY. (Man. p. 501; I. F. f. 1911.) In rocky woods, Pa. and N. J. to Ont. and N. B., west to Ore.—*Pennsylvania*: PIKE; BUCKS; LANCASTER; HUNTINGDON; ALLEGHENY.

3. *Fragaria Virginiana* Duchesne. VIRGINIA STRAWBERRY. (Man. p. 500; I. F. f. 1908.) In dry soil, N. B. to S. Dak., south to Fla., La. and Ariz.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; TIOGA; ALLEGHENY.

12. DUCHESNEA J. E. Smith.

1. *Duchesnea Indica* (Andr.) Focke. YELLOW OR INDIAN STRAWBERRY. (Man. p. 501; I. F. f. 1912.) In waste places, N. Y. and Pa. to Fla. Nat. or adv. from India.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; LANCASTER.

13. COMARUM L.

1. *Comarum palustre* L. PURPLE OR MARSH CINQUEFOIL. (Man. p. 501; I. F. f. 1937.) In swamps or peat-bogs, Lab. to Alaska, N. J., Iowa and Calif. Also in Eu. and Asia.—*Pennsylvania*: SUSQUEHANNA; WAYNE; MONROE; TIOGA; CRAWFORD.

14. ARGENTINA Lam.

1. *Argentina Anserina* (L.) Rydb. SILVER-WEED. (Man. p. 502; I. F. f. 1934.) On shores and salt-meadows, Greenland to B. C., N. J. and Neb., south in the Rocky Mts. to N. Mex. and Calif. Also in Eu. and Asia.—*Pennsylvania*: ERIE, Presque Isle.

15. POTENTILLA L.

Flowers axillary to the leaf-like bracts: stems creeping or spreading: perennials.

Stems silky-villous: first flower at the second node of the stem or a succeeding node.

Stems silky-strigillose: first flower at the first node of the stem.

1. *P. Canadensis*.

2. *P. pumila*.

Flowers in terminal cymes: stems erect or ascending: annuals or biennials.

Leaf-blades digitately 3-7-foliolate.

Leaflets 3: upper part of the achene longitudinally ridged.

3. *P. Monspelienensis*.

Leaflets 5-7: upper part of the achene smooth or reticulated.

Leaflets green beneath, evenly toothed: corolla about 2 cm. broad: petals longer than the sepals.

4. *P. sulphurea*.

Leaflets white-pubescent beneath, incised: corolla 4-8 mm. broad: petals shorter than the sepals.

5. *P. argentea*.

Leaf-blades pinnately 7-11-foliolate.

6. *P. paradoxa*.

1. *Potentilla Canadensis* L. FIVE-FINGER. (Man. p. 506; I. F. f. 1935.) In dry soil, Quebec to Minn., Ga. and the I. Terr.—*Pennsylvania*:

nia: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; ERIE; ALLEGHENY.

2. *Potentilla pumila* Poir. DWARF FIVE-FINGER. (Man. p. 506; I. F. f. 1935a.) In poor soil, N. Eng. to Pa.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

3. *Potentilla Monspeliensis* L. ROUGH CINQUEFOIL. (Man. p. 504; I. F. f. 1922.) In dry soil, Lab. to Alaska, S. C. and Kans. and in the Rocky Mts. to Ariz.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; CARBON; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

4. *Potentilla sulphurea* Lam. ROUGH-FRUITED CINQUEFOIL. (Man. p. 504; I. F. f. 1917.) In waste places, N. Y., Mich. and Va. Adv. from Eu.—*Pennsylvania*: ALLEGHENY.

5. *Potentilla argentea* L. SILVERY OR HOARY CINQUEFOIL. (Man. p. 503; I. F. f. 1914.) In dry soil, N. S. and Ont. to N. Dak., D. C., Ind. and Kans.—*Pennsylvania*: MONROE; NORTHAMPTON.

6. *Potentilla paradoxa* Nutt. BUSHY CINQUEFOIL. (Man. p. 505; I. F. f. 1925.) Shores of the Great Lakes, Pa. to Minn., Mo., N. Mex. and Ore. Also in Mex. and Mantchuria.—*Pennsylvania*: ERIE, Presque Isle.

16. WALDSTEINIA Willd.

1. *Waldsteinia fragarioides* (Michx.) Tratt. BARREN OR DRY STRAWBERRY. (Man. p. 506; I. F. f. 1939.) Woods and shaded hillsides, northern N. Eng. and Ont. to Minn., Ind. and along the Alleghenies to Ga.—*Pennsylvania*: MONROE; NORTHAMPTON; SCHUYLKILL; LEBANON; PERRY; FRANKLIN; TIOGA; CENTRE; ERIE; SOMERSET; ALLEGHENY.

17. GEUM L.

Style plumose below: sepals erect or spreading: corolla purple.

1. *G. rivale*.

Style not plumose: sepals reflexed: corolla white or yellow.

Head of fruit stalked: sepals not accompanied by bractlets.

2. *G. vernum*.

Head of fruit sessile: sepals accompanied by bractlets.

Corolla white.

Plant glabrate or softly pubescent: receptacle bristly.

3. *G. Canadense*.

Plant hirsute: receptacle glabrous or downy.

4. *G. Virginianum*.

Corolla yellow or cream-yellow.

Petals oblong, 3-4 mm. long: sepals about as long as the petals.

5. *G. flavum*.

Petals obovate, 6-8 mm. long: sepals much shorter than the petals.

6. *G. strictum*.

1. *Geum rivale* L. PURPLE OR WATER AVENS. (Man. p. 508; I. F. f. 1940.) In swamps and low grounds, Newf. to B. C., N. J., Pa., Mo. and Colo. Also in northern Eu. and Asia.—*Pennsylvania*: WAYNE; MONROE; TIOGA; SULLIVAN; ERIE; SOMERSET; CHESTER.

2. *Geum vernum* (Raf.) T. & G. SPRING AVENS. (Man. p. 507; I. F. f. 1943.) Shaded places, Ont. to W. Va. and Tex.—*Pennsylvania*: BUCKS; DELAWARE; LANCASTER; ALLEGHENY.

3. *Geum Canadense* Jacq. WHITE AVENS. (Man. p. 507; I. F. f. 1944.) In shaded places, N. S. to Minn., Ga. and Mo.—*Pennsylvania*: MONROE; NORTHAMPTON; DELAWARE; LANCASTER; HUNTINGDON; FRANKLIN; ALLEGHENY.

4. *Geum Virginianum* ROUGH AVENS. (Man. p. 507; I. F. f. 1945.) Low ground, N. B. to Minn., Pa. and southward in the Alleghenies.—*Pennsylvania*: NORTHAMPTON; MONROE; PIKE; CARBON; BUCKS; DELAWARE; LANCASTER; TIOGA; HUNTINGDON; FRANKLIN; ARMSTRONG; ERIE.

5. *Geum flavum* (Porter) Bicknell. CREAM-COLORED AVENS. (Man. p. 508; I. F. f. 1946.) In woods, N. Y. to N. C.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LUZERNE; FRANKLIN.

6. *Geum strictum* Ait. YELLOW AVENS. (Man. p. 508; I. F. f. 1948.) In swamps or low grounds, Newf. to B. C., N. J., Mo. and Ariz.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; LANCASTER; CAMBRIA; SOMERSET; ALLEGHENY.

18. *ULMARIA* Hill.

1. *Ulmaria rubra* Hill. QUEEN-OF-THE-PRAIRIE. (Man. p. 510; I. F. f. 1953.) In moist grounds and on prairies, Pa. to Ill., Ga., Ky. and Iowa.—*Pennsylvania*: LANCASTER; HUNTINGDON; CUMBERLAND; ERIE; SUSQUEHANNA.

19. *AGRIMONIA* L.

Lower surfaces of the leaves, and racemes glabrous or with loosely spreading hairs.

Roots not tuberous thickened; fruit 6-12 mm. high, turbinate, with many radiating bristles.

1. *A. hirsuta*.

Roots tuberous thickened; fruit 4 mm. high, hemispheric, with few ascending bristles.

2. *A. striata*.

Leaflets 3-5.

3. *A. pumila*.

Leaflets 5-9 or rarely more.

4. *A. mollis*.

Lower surfaces of the leaves and racemes softly and closely pubescent.

Roots tuberous thickened; leaves mostly with less than 9 broad leaflets.

5. *A. Brittoniana*.

Roots not tuberous thickened; leaves mostly with over 11 narrow leaflets.

6. *A. parviflora*.

1. *Agrimonia hirsuta* (Muhl.) Bicknell. TALL HAIRY AGRIMONY. (Man. p. 511; I. F. f. 1957.) Woods and thickets, N. B. to Minn., N. C. and Calif.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; LANCASTER; COLUMBIA; SOMERSET; ERIE; ALLEGHENY.

2. *Agrimonia striata* Michx. WOODLAND AGRIMONY. (Man. p. 511; I. F. f. 1958.) In dry woods, Conn. to Va. and Mo.—*Pennsylvania*: LANCASTER; BUCKS.

3. *Agrimonia pumila* Muhl. SMALL-FRUITED AGRIMONY. (Man. p. 511; I. F. f. 1959.) In dry soil, Pa. to Fla. and La.—*Pennsylvania*: LANCASTER.

4. *Agrimonia mollis* (T. & G.) Britton. SOFT AGRIMONY. (Man. p. 511; I. F. f. 1960.) Dry woods and thickets, Conn. to Mich., N. C. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LANCASTER.

5. *Agrimonia Brittoniana* Bicknell. BRITTON'S AGRIMONY. (Man. p. 511; I. F. f. 1961.) Along thickets and roadsides, Quebec to N. Y., south along the mountains to W. Va.—*Pennsylvania*: MONROE; NORTHAMPTON.

6. *Agrimonia parviflora* Soland. MANY-FLOWERED AGRIMONY. (Man. p. 512; I. F. f. 1962.) In moist or dry soil, N. Y. to Mich., Ga. and Miss.—*Pennsylvania*: DELAWARE, Tinicum; BUCKS; BERKS; LANCASTER; DAUPHIN; ALLEGHENY.

20. SANGUISORBA L.

Stamens numerous: flowers in head-like spikes: corolla greenish.

1. *S. Sanguisorba*.

Stamens 4: flowers in elongated spikes: corolla white. 2. *S. Canadensis*.

1. *Sanguisorba Sanguisorba* (L.) Britton. SALAD BURNET. (Man. p. 512; I. F. f. 1963.) In dry or rocky soil and in ballast, Ont. to Pa. and Md. Nat. or adv. from Eu.—*Pennsylvania*: NORTHAMPTON; MONROE; ALLEGHENY.

2. *Sanguisorba Canadensis* L. AMERICAN GREAT BURNET. (Man. p. 512; I. F. f. 1964.) In swamps and low meadows, Newf. to Mich. and Ga.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; LANCASTER; LEBANON; HUNTINGDON.

21. ROSA L.

Styles cohering and forming a column, exserted.

1. *R. setigera*.

Styles distinct, included.

Sepals persistent: stems unarmed or nearly so.

2. *R. blanda*.

Sepals deciduous: leaflets normally 5-12: stems erect or ascending: hypanthium often pubescent or glandular.

Leaflets with serrulate or finely serrate blades.

3. *R. Carolina*.

Leaflets with coarsely serrate blades.

Fruit subglobose.

Leaflets 5-7: spines slender: flowers solitary or few. 4. *R. humilis*.

Leaflets 7-9: spines stout: flowers corymbose.

5. *R. lucida*.

Fruit oval to narrowly ovoid.

Blades of the leaflets simply serrate.

6. *R. canina*.

Blades of the leaflets doubly serrate.

7. *R. rubiginosa*.

1. *Rosa setigera* Michx. PRAIRIE OR CLIMBING ROSE. (Man. p. 513; I. F. f. 1965.) In thickets and on prairies, Ont. to Wis., Fla. and Tex. Escaped in N. J. and Va.—*Pennsylvania*: PHILADELPHIA, Germantown; BUCKS; WASHINGTON; ALLEGHENY.

2. *Rosa blanda* Ait. SMOOTH OR MEADOW ROSE. (Man. p. 513; I. F. f. 1966.) In moist, rocky places, Newf. to Vt. and northern N. J., west to Ont. and Ill.—*Pennsylvania*: BUCKS; LANCASTER; PERRY; FRANKLIN; SUSQUEHANNA; HUNTINGDON; DELAWARE.

3. *Rosa Carolina* L. SWAMP ROSE. (Man. p. 513; I. F. f. 1970.) In low grounds and swamps, Quebec to Minn., south to Fla. and Miss.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

4. *Rosa humilis* Marsh. LOW OR PASTURE ROSE. (Man. p. 514; I. F. f. 1971.) In dry or rocky soil, Me. and Ont. to Wis., south to Ga. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

4a. *R. humilis villosa* Best. (Man. p. 514.) N. J., Pa. and southern N. Y.—*Pennsylvania*: BUCKS.

5. *Rosa lucida* Ehrh. SHINING ROSE. (Man. p. 514.) On shores or in sandy soil, Newf. and Ont. to N. J. and Pa.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LUZERNE; LANCASTER; COLUMBIA; FRANKLIN; ALLEGHENY.

6. *Rosa canina* L. DOG ROSE. CANKER ROSE. (Man. p. 514; I. F. f. 1973.) In waste places, and along roadsides, N. S., N. J. and Pa. Also in Tenn. Adv. or nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; SCHUYLKILL, Pottsville.

7. *Rosa rubiginosa* L. SWEETBRIER. (Man. p. 514; I. F. f. 1974.) In waste places, N. S. to Ont., Va. and Tenn.—*Pennsylvania*: MONROE; NORTHAMPTON; WAYNE; BUCKS; DELAWARE; CHESTER; YORK; LANCASTER; LEBANON; HUNTINGDON; ERIE; ALLEGHENY.

FAMILY 12. POMACEAE L. APPLE FAMILY.

Carpels papery or leathery at maturity.

Leaf-blades pinnately compound.

1. *SORBUS*.

Leaf-blades simple, entire, toothed or lobed.

Cavities of the ovary (carpels) as many as the styles.

Flesh of the pome with grit-cells.

2. *PYRUS*.

Flesh of the pome without grit-cells.

Cymes simple.

3. *MALUS*.

Cymes compound.

4. *ARONIA*.

Cavities of the ovary becoming twice as many as the styles.

5. *AMELANCHIER*.

Carpels bony at maturity.

Ovule 1 in each carpel, or, if two, dissimilar.

6. *CRATAEGUS*.

Ovules 2 in each carpel, alike.

7. *COTONEASTER*.

1. *SORBUS* L.

Fruit less than 6.5 mm. in diameter: leaflets with long acuminate blades.

1. *S. Americana*.

Fruit more than 7.5 mm. in diameter: leaflets with blunt or merely acute blades.

2. *S. sambucifolia*.

1. *Sorbus Americana* Marsh. AMERICAN MOUNTAIN ASH. (Man. p. 515; I. F. f. 1975.) In low woods or moist ground, Newf. to Man., along the mountains to N. C. and to Mich.—*Pennsylvania*: WAYNE; MONROE; CENTRE; HUNTINGDON; SOMERSET.

2. *Sorbus sambucifolia* (C. & S.) Roem. WESTERN MOUNTAIN ASH. (Man. p. 515; I. F. f. 1976.) In moist ground, Lab. to Alaska, Pa., Mich. and in Rocky Mts. to Colo. and Utah.—*Pennsylvania*: LUZERNE, Wilkesbarre; ALLEGHENY, escaped.

2. PYRUS L.

1. *Pyrus communis* L. PEAR. (Man. p. 515; I. F. f. 1977.) In thickets and woods, Me. to Pa., and the Gulf States. Native of Eu. and Asia.—*Pennsylvania*: DELAWARE; LANCASTER.

3. MALUS Juss.

Leaf-blades glabrous at least at maturity.

Leaf-blades oblong or lanceolate : styles nearly distinct. 1. *M. angustifolia*.

Leaf-blades ovate : styles manifestly united at the base. 2. *M. coronaria*.

Leaf-blades persistently pubescent, often tomentose beneath.

3. *M. Malus*.

1. *Malus angustifolia* (Ait.) Michx. NARROW-LEAVED CRAB-APPLE. (Man. p. 516; I. F. f. 1978.) In thickets, N. J. to Kans., Fla. and Ga.—*Pennsylvania*: CRAWFORD; ALLEGHENY; SOMERSET; WESTMORELAND.

2. *Malus coronaria* (L.) Mill. AMERICAN CRAB-APPLE. (Man. p. 516; I. F. f. 1979.) In thickets, Ont. to Mich., N. J. and S. C.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; LEBANON; SCHUYLKILL; FRANKLIN; HUNTINGDON; ALLEGHENY.

3. *Malus Malus* (L.) Britton. APPLE. (Man. p. 516; I. F. f. 1982.) In woods and thickets, N. Y., N. J. and Pa., to the Gulf States. Introd. from Eu.—*Pennsylvania*: NORTHAMPTON; CHESTER; DELAWARE; ALLEGHENY.

4. ARONIA Pers.

Lower surfaces of the leaves and the cyme-branches woolly : fruit red.

1. *A. arbutifolia*.

Lower surfaces of the leaves and the cyme-branches glabrous or essentially so : fruit purplish.

2. *A. nigra*.

1. *Aronia arbutifolia* (L.) Ell. RED CHOKE-BERRY. (Man. p. 517; I. F. f. 1983.) In swamps and wet woods, N. S. to Minn., Fla. and La.—*Pennsylvania*: NORTHAMPTON; MONTGOMERY; FRANKLIN; LANCASTER; FULTON; CRAWFORD; ERIE.

2. *Aronia nigra* (Willd.) Britton. BLACK CHOKE-BERRY. (Man. p. 517; I. F. f. 1984.) In swamps or low woods or sometimes in drier soil, N. S. to Ont. and Fla.—*Pennsylvania*: LACKAWANNA; MONROE; SCHUYLKILL; LUZERNE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; ERIE; SOMERSET; ALLEGHENY.

5. AMELANCHIER Medic.

A. Flowers in racemes : fruit globular.

Leaf-blades acute or acuminate at the apex : top of the ovary glabrous or nearly so.

Leaf-blades ovate or ovate-lanceolate, rounded or cordate at the base, glabrous at maturity. 1. *A. Canadensis*.

Leaf-blades oblong, oval, ovate or obovate, rarely subcordate at the base, densely white-woolly beneath at least when young. 2. *A. Botryapium*.

Leaf-blades rounded, obtuse or merely abruptly pointed at the apex: top of the ovary woolly. 3. *A. spicata*.

B. Flowers in clusters: fruit oblong or obovoid. 4. *A. oligocarpa*.

1. **Amelanchier Canadensis** (L.) Medic. JUNE OR SERVICE-BERRY. (Man. p. 517; I. F. f. 1985.) In dry woodlands, Newf. to Ont., Fla. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; SCHUYLKILL; CHESTER; LANCASTER; FRANKLIN; TIOGA; ALLEGHENY; ERIE.

2. **Amelanchier Botryapium** (L. f.) DC. SHAD-BUSH. (Man. p. 517; I. F. f. 1986.) In swamps and moist soil, N. B. to Man., Fla. and La.—*Pennsylvania*: NORTHAMPTON; LANCASTER; HUNTINGDON; VENANGO; ALLEGHENY.

3. **Amelanchier spicata** (Lam.) Dec. LOW JUNE-BERRY. (Man. p. 517; I. F. f. 1987.) In dry rocky places, N. Y. to N. C.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; FRANKLIN; SOMERSET; ALLEGHENY.

4. **Amelanchier oligocarpa** (Michx.) Roem. OBLONG-FRUITED JUNE-BERRY. (Man. p. 518; I. F. f. 1990.) In cold swamps, or wet rocky places, Lab. to Ont., Pa. and Mich.—*Pennsylvania*: MONROE; SCHUYLKILL.

6. CRATAEGUS L.

A. Corymbs each with many flowers.

Leaf-blades oblanceolate, spatulate or narrowly obovate.

Leaves, pedicels and calyx glabrous. 1. *C. Crus-galli*.

Leaves, pedicels and calyx pubescent, copiously so when young. 2. *C. punctata*.

Leaf-blades ovate, oval or suborbicular.

Leaves, pedicels and calyx glabrous or essentially so.

Leaf-blades truncate or cordate at the base. 3. *C. cordata*.

Leaf-blades narrowed at the base, often cuneately contracted.

Leaf-blades deeply cleft: styles 1-3. 4. *C. Oxyacantha*.

Leaf-blades serrate or shallowly incised: styles 5.

Leaf-blades firm, lustrous.

Fruit pyriform. 5. *C. Porteri*.

Fruit oval or globose-oval. 6. *C. Canbyi*.

Leaf-blades thin, dull. 7. *C. pruinosa*.

Leaves, sometimes only on the lower surface and about the teeth, the pedicels and calyx pubescent or glandular.

Leaves nearly glabrous.

Leaf-blades cordate or truncate at the base. 8. *C. coccinea*.

Leaf-blades narrowed at the base.

Fruit 8-14 mm. in diameter.

Fruit globular or oval: leaf-blades firm. 9. *C. rotundifolia*.

Fruit pyriform: leaf-blades thin. 10. *C. tenuifolia*.

Fruit 6-8 mm. in diameter. 11. *C. macracantha*.

Leaves manifestly pubescent, sometimes mainly along the veins on the lower side of the blade.

Leaf-blades ovate-orbicular, typically cordate or truncate at the base : fruit mostly over 2 cm. in diameter. 12. *C. mollis*.

Leaf-blades obovate, oval or ovate, typically narrowed or cuneate at the base : fruit less than 2 cm. in diameter.

Fruit globose or spheroidal. 13. *C. Biltmoreana*.

Fruit oval or oblong-oval. 14. *C. tomentosa*.

B. Corymbs 2-6-flowered, or the flowers sometimes solitary.

Leaf-blades ovate or oval, mostly acute : fruit red at maturity.

15. *C. Vailiae*.

Leaf-blades obovate or oblong-cuneiform : fruit yellow or greenish yellow.

16. *C. uniflora*.

1. *Crataegus Crus-Galli* L. COCKSPUR THORN. (Man. p. 519; I. F. f. 1991.) In thickets, Quebec to Man., N. H., Fla. and Tex.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; LEBANON; FRANKLIN; ALLEGHENY.

2. *Crataegus punctata* Jacq. LARGE-FRUITED THORN. (Man. p. 520; I. F. f. 1993.) In thickets, Quebec and Ont., to Iowa and Ga.—*Pennsylvania*: NORTHAMPTON; PIKE; BUCKS; DELAWARE; CHESTER; COLUMBIA; CAMBRIA; HUNTINGDON; SOMERSET; ALLEGHENY.

2a. *C. punctata canescens* Britton. (Man. p. 520.) Vt. to Ont., Pa. and Ohio.—*Pennsylvania*: NORTHAMPTON, near Easton.

3. *Crataegus cordata* (Mill.) Ait. WASHINGTON THORN. (Man. p. 520; I. F. f. 1994.) In woods and thickets, Va. to Ga, Ill. and Tenn. Naturalized in Pa. and N. J.—*Pennsylvania*: PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; LEBANON.

4. *Crataegus Oxyacantha* L. HAWTHORN. (Man. p. 520; I. F. f. 1995.) Along roadsides and in thickets, escaped.—*Pennsylvania*: PHILADELPHIA; DELAWARE; NORTHAMPTON; LANCASTER; LUZERNE; ALLEGHENY.

5. *Crataegus Porteri* Britton. PORTER'S THORN. (Man. p. 520.) In woods, Pa. and N. Y.—*Pennsylvania*: MONROE, Tannersville.

6. *Crataegus Canbyi* Sargent. In hedges and thickets, Pa. and Del.—*Pennsylvania*: DELAWARE, Tinicum.

7. *Crataegus pruinosa* (Wendl.) Beadle. PRUINOSE THORN. (Man. p. 521.) In hedges or thickets, Pa. to N. C. and Mo.—*Pennsylvania*: BUCKS.

8. *Crataegus coccinea* L. SCARLET THORN. (Man. p. 521; I. F. f. 1998.) Thickets, Newf. to Man., Fla. and Tex.—*Pennsylvania*: PIKE; SCHUYLKILL; NORTHAMPTON; COLUMBIA; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; FULTON; SOMERSET.

9. *Crataegus rotundifolia* (Ehrh.) Borck. GLANDULAR THORN. (Man. p. 521; I. F. f. 1999.) In open woods, Conn. to Ind., Fla. and Ala.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; LANCASTER; LEBANON; SOMERSET; BUCKS.

10. *Crataegus tenuifolia* Britton. THIN-LEAVED THORN. (Man. p. 521.) In woods and thickets, Pa. and Va.—*Pennsylvania*: DELAWARE.

11. *Crataegus macracantha* Lodd. LONG-SPINED THORN. (Man. p. 521; I. F. f. 2000.) In woods, Quebec to N. Dak., Va., and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; LEBANON; DELAWARE.

12. *Crataegus mollis* (T. & G.) Scheele. RED-FRUITED THORN. (Man. p. 521; I. F. f. 2001.) Thickets, Quebec to Mich., Neb., Kans., Pa., La. and Tex.—*Pennsylvania*: YORK; HUNTINGDON; ALLEGHENY.

13. *Crataegus Biltmoreana* Beadle. BILTMORE THORN. (Man. p. 521.) In woods, Pa. to N. C., Ala. and Mo.—*Pennsylvania*: MONROE, 2 m. south of Stroudsburg; BUCKS.

14. *Crataegus tomentosa* L. PEAR-THORN. PEAR HAW. (Man. p. 522; I. F. f. 2002.) In thickets, Ont. to N. J., Ga. Mich. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; COLUMBIA; FRANKLIN; HUNTINGDON; SULLIVAN; ALLEGHENY.

15. *Crataegus Vaillae* Britton. VAIL'S HAW. (Man. p. 522; I. F. f. 2005.) In thickets, Pa. to N. C.—*Pennsylvania*: DELAWARE.

16. *Crataegus uniflora* Muench. DWARF THORN. (Man. p. 522; I. F. f. 2004.) In sandy soil, N. Y. to Fla., W. Va., Mo. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; MONTGOMERY; CHESTER; FRANKLIN.

7. COTONEASTER Medic.

1. *Cotoneaster Pyracantha* (L.) Spach. EVERGREEN OR FIRE THORN. (Man. p. 522; I. F. f. 2006.) In thickets, escaped from cult. Native of Europe.—*Pennsylvania*: BUCKS, Doylestown; PHILADELPHIA.

FAMILY 13. DRUPACEAE DC. PLUM FAMILY.

Drupe glabrous: stone not corrugated.

1. PRUNUS.

Drupe velvety: stone corrugated.

2. AMYGDALUS.

1. PRUNUS L.

A. Flowers in corymbs or umbellate clusters from the branches of the preceding year, before the leaves.

a. Inflorescence umbel-like: drupes over 7.5 mm. in diameter.

Leaves convolute in vernation.

Umbel-like clusters several-flowered.

Drupe red or orange, without a bloom, mostly over 20 mm. thick.

1. *P. Americana*.

Drupe purple, with a bloom, mostly less than 15 mm. thick.

2. *P. Allegheniensis*.

Umbel-like clusters 1-2-flowered.

3. *P. spinosa*.

Leaves conduplicate in vernation.

Large trees: corolla 1.5-3 cm. wide: leaf-blades sharply serrate: drupes mostly over 10 mm. in diameter.

Drupe sour: leaves glabrous.

4. *P. Cerasus*.

Drupe sweet: leaves pubescent.

5. *P. Avium*.

Low spreading shrubs: corolla about 1 cm. broad: leaf-blades appressed-serrate: drupes mostly less than 10 mm. in diameter.

Leaf-blades typically oval or oblong.

6. *P. cuneata*.

Leaf-blades typically oblanceolate or spatulate.

7. *P. pumila*.

b. Inflorescence corymbose : drupes less than 7.5 mm. in diameter.

8. *P. Pennsylvanica*.

B. Flowers in racemes terminating leafy branches of the year.

Racemes corymb-like.

9. *P. Mahaleb*.

Racemes elongated.

Sepals deciduous : leaf-blades with sharp somewhat spreading teeth :
drupe mainly astringent.

Stone smooth : petals less than 5 mm. long.

10. *P. Virginiana*.

Stone roughened : petals over 5 mm. long.

11. *P. Padus*.

Sepals persistent : leaf-blades with appressed blunt teeth : drupe mainly
sweet.

12. *P. serotina*.

1. *Prunus Americana* Marsh. WILD YELLOW OR RED PLUM. (Man. p. 524 ; I. F. f. 2007.) In woods and thickets, N. Y. to Mont., Fla. and Colo.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; LUZERNE ; FRANKLIN ; HUNTINGDON ; SOMERSET ; ALLEGHENY.

2. *Prunus Allegheniensis* Porter. PORTER'S PLUM. (Man. p. 524 ; I. F. f. 2012.) In thickets, Allegheny Mountains, Pa.—*Pennsylvania* : HUNTINGDON, Barrens ; CLEARFIELD ; ELK.

3. *Prunus spinosa* L. SLOE. BLACKTHORN. BUCKTHORN. (Man. p. 525 ; I. F. f. 2016.) Along roadsides, Mass. to Pa. and N. J. Nat. or adv. from Eu.—*Pennsylvania* : PHILADELPHIA ; DELAWARE.

4. *Prunus Cerasus* L. SOUR CHERRY. (Man. p. 525 ; I. F. f. 2020.) In woods and thickets, N. Y. and Pa., to the Gulf States. Native of Eu.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; ALLEGHENY.

5. *Prunus Avium* L. WILD OR SWEET CHERRY. (Man. p. 525 ; I. F. f. 2021.) In thickets and woodlands, Conn. to Pa. and the Gulf States. Native of Eu.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; MONTGOMERY ; LACKAWANNA ; ALLEGHENY.

6. *Prunus cuneata* Raf. APPALACHIAN CHERRY. (Man. p. 525 ; I. F. f. 2018.) In wet soil, or among rocks, N. H. to Minn., N. C. and Wis.—*Pennsylvania* : NORTHAMPTON ; LANCASTER, N. Texas ; CHESTER.

7. *Prunus pumila* L. SAND OR DWARF CHERRY. (Man. p. 525 ; I. F. f. 2017.) On sand or gravelly shores, N. B. to Man., N. J. and Mich.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; ALLEGHENY.

8. *Prunus Pennsylvanica* L. f. WILD RED OR PIN CHERRY. (Man. p. 526 ; I. F. f. 2022.) In rocky woods and clearings, Newf. to Ga., west to the Rocky Mts.—*Pennsylvania* : PIKE ; MONROE ; NORTHAMPTON ; SCHUYLKILL ; LUZERNE ; BLAIR ; CAMBRIA ; ERIE.

9. *Prunus Mahaleb* L. PERFUMED CHERRY. (Man. p. 526 ; I. F. f. 2023.) Thickets and waste places, N. Y. and Pa. Adv. from Eu.—*Pennsylvania* : LANCASTER ; NORTHAMPTON ; FRANKLIN.

10. *Prunus Virginiana* L. CHOKE CHERRY. (Man. p. 526 ; I. F. f. 2024.) Along river banks and in rocky situations, Newf. to Man., B. C., Ga., Tex. and Colo.—*Pennsylvania* : PIKE ; MONROE ; NORTHAMPTON ; BUCKS ; SCHUYLKILL ; BERKS ; MONTGOMERY ; TIOGA ; LEHIGH ; CHESTER ; DELAWARE ; ALLEGHENY.

11. *Prunus Padus* L. Locally escaped in eastern N. Am. Native of Eu.—*Pennsylvania*: ALLEGHENY, Pittsburgh.

12. *Prunus serotina* Ehrh. WILD BLACK CHERRY. (Man. p. 526; I. F. f. 2026.) In woods or open places, Ont. to Fla., S. Dak. and Tex.—*Pennsylvania*: PIKE; MONROE; BUCKS; DELAWARE; CHESTER; LANCASTER; CENTRE; CAMBRIA; FRANKLIN; ALLEGHENY.

2. AMYGDALUS L.

1. *Amygdalus Persica* L. PEACH. (Man. p. 526; I. F. f. 2027.) Escaped from cult., N. Y. to Ga.—*Pennsylvania*: DELAWARE; LANCASTER, and generally throughout the State.

FAMILY 14. CAESALPINIACEAE Kl. & Garcke. SENNA FAMILY.

Corolla apparently papilionaceous, but with the unpaired petal embraced by the wings: leaves with 1-foliate blades. I. CERCIS.

Corolla more or less irregular, often nearly regular: leaves with pinnately compound blades.

Leaves with simply pinnate blades.

2. CASSIA.

Leaves with 2-pinnate blades.

Flower with a short receptacle: stamens surpassing the petals.

3. GLEDITSIA.

Flower with a long receptacle: stamens shorter than the petals.

4. GYMNOCLADUS.

1. CERCIS L.

1. *Cercis Canadensis* L. RED-BUD. AMERICAN JUDAS-TREE. (Man. p. 529; I. F. f. 2033.) In rich soil, Ont. to Minn., N. J., Fla. and Tex.—*Pennsylvania*: DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; BLAIR; ALLEGHENY.

2. CASSIA L.

Corolla very irregular: calyx-lobes acuminate.

Corolla less than 1 cm. wide: one petal much larger than the other four.

1. *C. nictitans*.

Corolla over 1 cm. wide: petals moderately unequal.

2. *C. Chamaecrista*.

Corolla essentially regular, the five petals nearly equal: calyx-lobes obtuse.

Petiole gland between the lower pair of leaflets: leaflets 4-6, the blades obovate.

3. *C. Tora*.

Petiole gland at the base of the rachis: leaflets 12-20, the blades elliptic or oblong.

4. *C. Marylandica*.

1. *Cassia nictitans* L. WILD SENSITIVE-PLANT. (Man. p. 529; I. F. f. 2034.) In dry soil, Me. to Ga., west to Ind., Kans. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; LUZERNE; HUNTINGDON; ALLEGHENY.

2. *Cassia Chamaecrista* L. LARGE-FLOWERED SENSITIVE PEA. (Man. p. 529; I. F. f. 2035.) In dry soil, range of the preceding species, but extending further west.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; MONROE; LANCASTER; YORK; PERRY; FRANKLIN; ALLEGHENY.

3. Cassia Tora L. LOW SENNA. (Man. p. 529; I. F. f. 2036.) Along rivers, southern Pa. to Ind. and Mo., south to Fla. and Mex., and throughout tropical Am. and the warmer parts of the Old World.—*Pennsylvania*: DELAWARE, Lansdowne.

4. Cassia Marylandica L. WILD OR AMERICAN SENNA. (Man. p. 530; I. F. f. 2037.) In swamps and wet soil, N. Eng. to Mich., Neb., Fla. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; LEHIGH; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; ALLEGHENY.

3. GLEDITSIA L.

1. Gleditsia triacanthos L. HONEY OR SWEET LOCUST. (Man. p. 531; I. F. f. 2041.) In woods, N. Y. and Ont. to Mich., Ga. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; FRANKLIN; HUNTINGDON; LYCOMING; GREENE; ALLEGHENY.

4. GYMNOCLADUS Lam.

1. Gymnocladus dioica (L.) Koch. KENTUCKY COFFEE-TREE. (Man. p. 531; I. F. f. 2043.) Rich woods, Ont. to Minn., Neb., Tenn. and the I. Terr.—*Pennsylvania*: FRANKLIN.

FAMILY 15. PAPILIONACEAE L. PEA FAMILY.

Stamens 10: filaments distinct. TRIBE I. PODALYRIEAE.

Stamens 10 or fewer: filaments monadelphous or diadelphous.

Leaves destitute of tendrils.

Herbs, shrubs, trees or woody vines.

Fruit 2-valved or indehiscent, not a loment.

Foliage not glandular-dotted.

Anthers of 2 kinds: filaments monadelphous.

TRIBE II. GENISTEAE.

Anthers all alike: filaments diadelphous, at least beyond the middle.

Leaf-blades 3-foliolate.

Leaflets toothed.

TRIBE III. TRIFOLIEAE.

Leaflets entire.

TRIBE IV. LOTEAE.

Leaf-blades pinnately several to many-foliolate, or rarely 1-foliolate.

TRIBE V. GALEGEAE.

Foliage glandular-dotted.

TRIBE VI. PSORALEAE.

Fruit a loment.

TRIBE VII. HEDYSAREAE.

Herbaceous vines or herbs.

TRIBE VIII. PHASEOLEAE.

Leaves bearing tendrils.

TRIBE IX. VICIEAE.

TRIBE I. PODALYRIEAE.

A single genus in our range.

1. BAPTISIA.

TRIBE II. GENISTEAE.

Herbs with 1-foliolate or 5-11-foliolate leaf-blades.

Pod turgid or inflated: leaf-blades 1-foliolate.

2. CROTALARIA.

Pod flattened: leaf-blades 5-11-foliolate.

3. LUPINUS.

Shrubs with 1-3-foliolate leaf-blades.

Lips of the calyx much longer than the very short tube: leaves prickly.

4. ULEX.

Lips of the calyx about as long as the tube.

5. CYTISUS.

TRIBE III. TRIFOLIEAE.

Pods curved or coiled.

Pods straight.

Pods leathery.

Pods membranous.

6. MEDICAGO.

7. MELILOTUS.

8. TRIFOLIUM.

TRIBE IV. LOTEAE.

A single genus in our range.

9. LOTUS.

TRIBE V. GALEGEAE.

Standard with a blade as broad as long or broader, commonly spreading.

Leaf-blades unequally pinnate.

Herbs.

10. CRACCA.

Shrubs or trees.

11. ROBINIA.

Leaf-blades equally pinnate.

12. SESBAN.

Standard with a relatively narrow, usually erect blade.

13. ASTRAGALUS.

TRIBE VI. PSORALEAE.

Single genus in our range.

14. AMORPHA.

TRIBE VII. HEDYSAREAE.

Leaf-blades pinnately several-foliolate.

Flowers umbellate : corolla purplish.

15. CORONILLA.

Flowers not umbellate : corolla yellow.

16. AESCHYNOMENE.

Leaf-blades 3-foliolate.

Corolla yellow.

17. STYLOSANTHES.

Corolla white, blue, purple or violet.

Leaflets stipellate : laments of several joints.

18. MEIBOMIA.

Leaflets not stipellate : laments of 1 or rarely 2 joints.

19. LESPEDEZA.

TRIBE VIII. PHASEOLEAE.

Keel neither curved nor coiled.

Style glabrous or sparingly pubescent below.

Standard not spurred at the base.

Calyx subtended by two bractlets.

20. GALACTIA.

Calyx without bractlets.

21. FALCATA.

Standard spurred at the base.

22. BRADBURYA.

Style bearded along the inner side.

23. CLITORIA.

Keel coiled or curved.

Keel spirally twisted.

Leaves without stipels : leaflets 5 or more.

24. APIOS.

Leaves with stipels : leaflets 3.

25. PHASEOLUS.

Keel incurved.

26. STROPHOSTYLES.

TRIBE IX. VICIEAE.

Style terete, with a tuft of hairs at the apex.

27. VICIA.

Style flattened, pubescent along the inner side.

28. LATHYRUS.

1. BAPTISIA Vent.

Corolla blue : pods over 15 mm. long.

1. *B. australis*.

Corolla yellow : pods less than 15 mm. long.

2. *B. tinctoria*.

1. *Baptisia australis* (L.) R.Br. BLUE WILD OR BLUE FALSE INDIGO. (Man. p. 535 ; I. F. f. 2049.) In rich soil, western Pa. to Mo., south to Ga. and Ark.—*Pennsylvania* : CLARION ; ALLEGHENY ; FAYETTE.

2. *Baptisia tinctoria* (L.) R.Br. WILD OR YELLOW INDIGO. (Man. p. 535; I. F. f. 2050.) In dry soil, Me. to Minn., Fla. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; DELAWARE; CHESTER; FRANKLIN; HUNTINGDON; FAYETTE.

2. CROTALARIA L.

1. *Crotalaria sagittalis* L. RATTLE-BOX. (Man. p. 536; I. F. f. 2055.) In dry, open places, northern N. Eng. to Fla., west to Ark. and Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; BERKS; DELAWARE; CHESTER; LANCASTER; YORK; PERRY; FRANKLIN.

3. LUPINUS L.

1. *Lupinus perennis* L. WILD LUPINE. (Man. p. 536; I. F. f. 2057.) In dry, sandy soil, Me. to Minn., Fla., Mo. and La.—*Pennsylvania*: PIKE; BUCKS; BERKS; DELAWARE; CHESTER; LANCASTER; LEBANON; FRANKLIN; FULTON; HUNTINGDON.

4. ULEX L.

1. *Ulex Europaeus* L. GORSE. WHIN. (Man. p. 537; I. F. f. 2061.) In waste places, southern N. Y. to eastern Va., escaped. Also on Vancouver Island. Fugitive from Eu.—*Pennsylvania*: PHILADELPHIA, ballast.

5. CYTISUS L.

1. *Cytisus scoparius* (L.) Link. BROOM. GREEN OR SCOTCH BROOM. (Man. p. 537; I. F. f. 2063.) In waste places, Mass. to Va. Also at Shelburne, N. S., and on Vancouver Island. Adv. or nat. from Eu.—*Pennsylvania*: BUCKS; BERKS; LANCASTER; ALLEGHENY.

6. MEDICAGO L.

Plants perennial: corolla violet.

1. *M. sativa*.

Plants annual: corolla yellow.

Pods curved, unarmed, 1-seeded.

2. *M. lupulina*.

Pods spirally twisted, spiny, several-seeded.

3. *M. denticulata*.

Pods loosely coiled, the edge not furrowed.

4. *M. Arabica*.

Pods tightly coiled, the edge furrowed.

1. *Medicago sativa* L. ALFALFA. LUCERNE. (Man. p. 538; I. F. f. 2064.) In fields and waste places, N. Eng. and Ont. to Minn., south to Va. and Tex. Introd. from Eu.—*Pennsylvania*: NORTHAMPTON; DELAWARE; CHESTER; BUCKS; LANCASTER; ERIE; ALLEGHENY.

2. *Medicago lupulina* L. BLACK OR HOP MEDIC. NONESUCH. (Man. p. 538; I. F. f. 2065.) In fields and waste places generally. Native of Eu. and Asia.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; ERIE; ALLEGHENY.

3. *Medicago denticulata* Willd. TOOTHED MEDIC. (Man. p. 538; I. F. f. 2066.) In waste places and in ballast about the seaports, N. S. to Pa. Also in the southern and western states and on the Pacific Coast.

Fugitive or adv. from Eu.—*Pennsylvania*: BUCKS; PHILADELPHIA, ballast.

4. *Medicago Arabica* All. SPOTTED MEDIC. (Man. p. 538; I. F. f. 2067.) In waste places and ballast, N. B. to Pa. Also on the Pacific Coast. Fugitive or adv. from Eu.—*Pennsylvania*: PHILADELPHIA; DELAWARE.

7. MELILOTUS Juss.

Corolla white: standard longer than the wings.

1. *M. alba*.

Corolla yellow: standard about as long as the wings.

2. *M. officinalis*.

1. *Melilotus alba* Desv. WHITE MELILOT OR SWEET CLOVER. (Man. p. 539; I. F. f. 2068.) In waste places, eastern and central United States. Adv. or nat. from Eu. and native also of Asia.—*Pennsylvania*: MONROE; BUCKS; MONTGOMERY; BERKS; CHESTER; LANCASTER; YORK; COLUMBIA; HUNTINGDON; ALLEGHENY.

2. *Melilotus officinalis* (L.) Lam. YELLOW MELILOT OR SWEET CLOVER. (Man. p. 539; I. F. f. 2069.) Range of preceding species.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; ALLEGHENY.

8. TRIFOLIUM L.

Corolla yellow.

Stipules linear: leaflets sessile: racemes 12-18 mm. long.

1. *T. aureum*.

Stipules ovate: terminal leaflet stalked: racemes 6-12 mm. long.

Standard conspicuously striate: racemes 20-40-flowered.

2. *T. procumbens*.

Standard scarcely striate: racemes 3-20-flowered.

3. *T. dubium*.

Corolla white, pink, red or purple.

Racemes cylindric: calyx copiously pubescent, its lobes plumose.

Corolla shorter than the calyx, white.

4. *T. arvense*.

Corolla fully as long as the calyx, crimson.

5. *T. incarnatum*.

Raceme globular or ovoid: calyx glabrous or nearly so.

Flowers short-pedicelled: racemes dense, head-like.

6. *T. pratense*.

Flowers slender-pedicelled: racemes umbel-like.

Racemes over 2.5 cm. in diameter at maturity.

Plant annual or biennial, pubescent, not stoloniferous.

7. *T. reflexum*.

Plant perennial, glabrous, stoloniferous.

8. *T. stoloniferum*.

Racemes less than 2 cm. in diameter at maturity.

Stems ascending or procumbent: corolla pink or purple.

Corolla pink, much longer than the calyx: stems ascending.

9. *T. hybridum*.

Corolla purple, about equalling the calyx: stems procumbent.

10. *T. Carolinianum*.

Stems creeping: corolla white or essentially so.

11. *T. repens*.

1. *Trifolium aureum* Poll. YELLOW OR HOP-CLOVER. (Man. p. 539; I. F. f. 2070.) Along roadsides and in waste places, N. S., to Va., west to Ont. and Iowa. Nat. from Eu.—*Pennsylvania*: MONROE;

BUCKS; MONTGOMERY; BERKS; DELAWARE; CHESTER; LANCASTER; YORK; COLUMBIA; HUNTINGDON; ALLEGHENY.

2. *Trifolium procumbens* L. LOW OR SMALLER HOP-CLOVER. (Man. p. 540; I. F. f. 2071.) In fields and along roadsides in the northern and southern states. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; BERKS; LANCASTER; YORK; FRANKLIN.

3. *Trifolium dubium* Sibth. LEAST HOP-CLOVER. (Man. p. 540; I. F. f. 2072.) In fields and waste places, N. Eng., N. J., and in the south-states. Also in B. C. Nat. from Eu.—*Pennsylvania*: BUCKS; DELAWARE.

4. *Trifolium arvense* L. RABBIT-FOOT OR STONE CLOVER. (Man. p. 540; I. F. f. 2074.) In fields and waste places, northern and southern states. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; LUZERNE; HUNTINGDON; ALLEGHENY.

5. *Trifolium incarnatum* L. CRIMSON CLOVER. (Man. p. 540; I. F. f. 2073.) In fields, waste places and ballast, southern N. Y., N. J. and Pa. Introd. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; ALLEGHENY.

6. *Trifolium pratense* L.* RED OR MEADOW CLOVER. (Man. p. 540; I. F. f. 2075.) In fields, northern and southern states. Nat. from Eu. Native also of Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; PIKE; MONROE; HUNTINGDON; FRANKLIN; ALLEGHENY.

7. *Trifolium reflexum* L. BUFFALO CLOVER. (Man. p. 541; I. F. f. 2079.) In meadows, southern Ont., western N. Y. and Pa. to Iowa and Neb., south to Fla., and Tex.—*Pennsylvania*: MONTGOMERY, on Schuylkill; ALLEGHENY.

8. *Trifolium stoloniferum* Muhl. RUNNING BUFFALO CLOVER. (Man. p. 541; I. F. f. 2080.) Prairies and dry woods, Ohio to Neb., south to Ky. and Mo., and sparingly eastward.—*Pennsylvania*: CHESTER.

9. *Trifolium hybridum* L. ALSIKE OR ALSATIAN CLOVER. (Man. p. 541; I. F. f. 2081.) In fields and waste places, N. S. to Idaho, south to N. J. and Ga.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; SUSQUEHANNA; FRANKLIN; ALLEGHENY.

10. *Trifolium Carolinianum* Michx. CAROLINA CLOVER. (Man. p. 541; I. F. f. 2082.) In waste places and in fields and open places, Va. to Fla., west to Tex. Introduced northward.—*Pennsylvania*: PHILADELPHIA, ballast.

11. *Trifolium repens* L. WHITE OR DUTCH CLOVER. (Man. p. 541; I. F. f. 2083.) In fields and open places, eastern and central N. Am. Also in the Northwest. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

* *T. maritimum* Huds. has been found at Bethlehem, Northampton County.

9. LOTUS L.

1. *Lotus corniculatus* L. BIRD'S-FOOT TREFOIL. (Man. p. 542; I. F. f. 2084.) In waste places and in ballast, N. B., and about the seaports of the Eastern and Middle States. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA, ballast.

10. CRACCA L.

1. *Cracca Virginiana* L. CAT-GUT. GOAT'S RUE. (Man. p. 548; I. F. f. 2117.) In dry sandy soil, southern N. Eng. to Minn., south to Fla., La. and northern Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; MONTGOMERY; FRANKLIN; FULTON; HUNTINGDON; ALLEGHENY.

11. ROBINIA L.

Corolla white: twigs, petioles and pods glabrous.
Corolla pink: twigs, petioles and pods glandular.

1. *R. Pseudacacia*.
2. *R. viscosa*.

1. *Robinia Pseudacacia* L. LOCUST-TREE. (Man. p. 549; I. F. f. 2121.) In woods, Pa., south to Ga., west to Iowa and the I. Terr. Nat. in the Middle and Eastern States and eastern Can.—*Pennsylvania*: MONROE; PERRY; HUNTINGDON; FRANKLIN; FULTON; ALLEGHENY; LANCASTER; YORK; BUCKS; DELAWARE; CHESTER.

2. *Robinia viscosa* Vent. CLAMMY LOCUST. (Man. p. 549; I. F. f. 2122.) In woods, mountains of Va. to Ga., and nat. northward.—*Pennsylvania*: BUCKS; PHILADELPHIA; DELAWARE; CHESTER.

12. SESBAN Adans.

1. *Sesban macrocarpa* Muhl. LONG-PODDED SESBAN. (Man. p. 550; I. F. f. 2124.) In wet or moist soil, Mo. to Tex., east to S. C. and Fla., south to Central America. Introduced northward.—*Pennsylvania*: DELAWARE, Lansdowne.

13. ASTRAGALUS L.

1. *Astragalus Carolinianus* L. CAROLINA MILK VETCH. (Man. p. 551; I. F. f. 2130.) Along streams, Hudson Bay and Quebec to the Rocky Mts., south to Ga., La. and Colo.—*Pennsylvania*: FRANKLIN; SUSQUEHANNA; BEDFORD; SOMERSET; BLAIR; FAYETTE; CAMBRIA; CLINTON; ALLEGHENY; ERIE, Presque Isle.

14. AMORPHA L.

1. *Amorpha fruticosa* L. FALSE OR BASTARD INDIGO. (Man. p. 545; I. F. f. 2101.) Along streams, Ohio to Man., south to Fla., Colo. and Chihuahua.—*Pennsylvania*: PHILADELPHIA, escaped.

15. CORONILLA L.

1. *Coronilla varia* L. CORONILLA. (Man. p. 557; I. F. f. 2164.) Roadsides and waste places, Conn., southern N. Y. Pa. and N. J. Adv. or nat. from Eu.—*Pennsylvania*: CHESTER, streets of W. Chester.

16. **AESCHYNOMENE** L.

1. **Aeschynomene Virginica** (L.) B.S.P. SENSITIVE JOINT VETCH.
(Man. p. 558; I. F. f. 2167.) River banks, southeastern Pa. and N. J. to Fla., west to La.—*Pennsylvania*: DELAWARE.

17. **STYLOSANTHES** Sw.

1. **Stylosanthes biflora** (L.) B.S.P. PENCIL-FLOWER. (Man. p. 558; I. F. f. 2168.) In dry soil, southeastern N. Y. to Fla., west to Ind., Kans., the I. Terr. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; BERKS; LEBANON; LANCASTER; MONTGOMERY; YORK; FRANKLIN; FAYETTE.

18. **MEIBOMIA** Adans.

Pods straight along the upper suture, deeply constricted along the lower suture.

Scape and leaf arising from the rootstock. 1. *M. nudiflora*.

Scape arising from a whorl of leaves or terminating a leafy stem.

Leaves whorled. 2. *M. grandiflora*.

Leaves scattered. 3. *M. pauciflora*.

Pods constricted along both sutures, but more deeply below than above.

Stems weak, trailing or reclining.

Leaflets with orbicular or suborbicular blades. 4. *M. Michauxii*.

Leaflets with ovate or oval blades.

Corolla whitish: leaves yellowish green: stipules ovate.

5. *M. ochroleuca*.

Corolla purple: leaves dull green: stipules subulate. 6. *M. glabella*.

Stems erect or ascending.

Leaves with little or no petioles.

7. *M. sessilifolia*.

Leaves with relatively long petioles.

Joints of the pod markedly longer than wide.

Leaflets with obtuse yellowish green rough-pubescent blades.

8. *M. canescens*.

Leaflets with long-acuminate glabrous blades, glaucous beneath.

9. *M. bracteosa*.

Joints of the pod only slightly longer than wide.

Pods manifestly stipitate.

Plants glabrous or nearly so.

Leaflets green beneath, the blades lanceolate to oblong.

10. *M. paniculata*.

Leaflets glaucous beneath, the blades ovate to oval.

11. *M. laevigata*.

Plants pubescent or scabrous-pubescent.

Leaflets velvety-pubescent beneath, the blades leathery.

12. *M. viridiflora*.

Leaflets thinly pubescent beneath, the blades thin.

13. *M. Dillenii*.

Pods not stipitate or scarcely so.

Pods 4-7-jointed: corollas conspicuous.

14. *M. Canadensis*.

Pods 2-3-jointed: corollas relatively inconspicuous.

Leaflets scabrous, the blades mostly over 2 cm. long.

15. *M. rigida*.

Leaflets smooth, the blades mostly less than 2 cm. long.

Stem glabrous or nearly so: leaflets eciliate. 16. *M. Marylandica*.

Stem pubescent: leaflets ciliate.

17. *M. obtusa*.

1. *Meibomia nudiflora* (L.) Kuntze. NAKED-FLOWERED TICK-TRE-FOIL. (Man. p. 560; I. F. f. 2170.) In dry woods, Quebec to Minn., south to Fla. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; MONTGOMERY; ALLEGHENY.

2. *Meibomia grandiflora* (Walt.) Kuntze. POINTED-LEAVED TICK-TREFOIL. (Man. p. 560; I. F. f. 2171.) In dry or rocky woods, Quebec to Minn., south to Fla. and the I. Terr.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; MONROE; HUNTINGDON.

3. *Meibomia pauciflora* (Nutt.) Kuntze. FEW-FLOWERED TICK-TREFOIL. (Man. p. 560; I. F. f. 2172.) In woods, Ont. (?) and western N. Y. to Fla., west to Ohio, Ark. and La.—*Pennsylvania*: CHESTER.

4. *Meibomia Michauxii* Vail. PROSTRATE TICK-TREFOIL. (Man. p. 560; I. F. f. 2174.) Dry woods, Me. to Minn., south to Fla. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; HUNTINGDON; ALLEGHENY.

5. *Meibomia ochroleuca* (M. A. Curtis) Kuntze. CREAM-FLOWERED TICK-TREFOIL. (Man. p. 560; I. F. f. 2175.) In woodlands, N. J. and Pa. to Ga. Also in Tenn. and Mo.—*Pennsylvania*: NORTHAMPTON.

6. *Meibomia glabella* (Michx.) Kuntze. TRAILING TICK-TREFOIL. (Man. p. 560; I. F. f. 2176.) In dry, sandy woods, eastern Mass. to S. C.—*Pennsylvania*: BUCKS.

7. *Meibomia sessilifolia* (Torr.) Kuntze. SESSILE-LEAVED TICK-TREFOIL. (Man. p. 560; I. F. f. 2177.) In dry soil, Mass., R. I. to Mich., south to Ky., Ark. and Tex.—*Pennsylvania*: LANCASTER, on the Susquehanna.

8. *Meibomia canescens* (L.) Kuntze. HOARY TICK-TREFOIL. (Man. p. 561; I. F. f. 2179.) In rich soil, Ont. to Mass., Fla., Minn. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; FAYETTE; ALLEGHENY.

9. *Meibomia bracteosa* (Michx.) Kuntze. LONG-BRACTED TICK-TREFOIL. (Man. p. 561; I. F. f. 2181.) In thickets, Ont. to Minn., Fla., Mo. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN.

10. *Meibomia paniculata* (L.) Kuntze. PANICLED TICK-TREFOIL. (Man. p. 561; I. F. f. 2182.) In dry soil, Ont. to Minn., south to Mass., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; MONTGOMERY; YORK; HUNTINGDON; ALLEGHENY.

11. *Meibomia laevigata* (Nutt.) Kuntze. SMOOTH TICK-TREFOIL. (Man. p. 561; I. F. f. 2183.) In dry woods, southern N. Y. to Fla., Mo. and Tex.—*Pennsylvania*: NORTHAMPTON; DELAWARE, Tinicum.

12. *Meibomia viridiflora* (L.) Kuntze. VELVET-LEAVED TICK-TREFOIL. (Man. p. 562; I. F. f. 2185.) Dry woods, southern N. Y. to Fla.,

west to Mich., Mo. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER.

13. *Meibomia Dillenil* (Darl.) Kuntze. DILLEN'S TICK-TREFOIL. (Man. p. 562; I. F. f. 2186.) Woods, Me. to Minn., Va., Ky., Mo. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; PHILADELPHIA; BEDFORD; FRANKLIN; HUNTINGDON.

14. *Meibomia Canadensis* (L.) Kuntze. CANADIAN OR SHOWY TICK-TREFOIL. (Man. p. 562; I. F. f. 2188.) Thickets and river-banks. N. B. to Man., south to N. C., Mo. and the I. Terr.—*Pennsylvania*: PIKE; LUZERNE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; DAUPHIN; DELAWARE; ALLEGHENY.

15. *Meibomia rigida* (Ell.) Kuntze. RIGID TICK-TREFOIL. (Man. p. 562; I. F. f. 2189.) In dry soil, Mass. to Fla., west to Mich., Neb. and La.—*Pennsylvania*: LACKAWANNA; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON.

16. *Meibomia Marylandica* (L.) Kuntze. SMOOTH SMALL-LEAVED TICK-TREFOIL. (Man. p. 562; I. F. f. 2190.) In dry soil and in copses, Ont. to Mass., Fla., Mich. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; HUNTINGDON.

17. *Meibomia obtusa* (Muhl.) Vail. HAIRY SMALL-LEAVED TICK-TREFOIL. (Man. p. 562; I. F. f. 2191.) Dry soil, Ont. to Mass. and Fla., west to Mich. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LEBANON; HUNTINGDON.

19. *LESPEDeza* Michx.

Plants with both petaliferous and apetalous flowers: corolla purple or purplish: pod manifestly surpassing the calyx.

Flower-clusters on slender peduncles which generally surpass the leaves.

Petaliferous flowers in close spike-like clusters or capitate.

Plants with slender trailing or diffusely procumbent stems.

Stems glabrous or pubescent with appressed hairs. 1. *L. repens*.

Stems woolly or pubescent with downy hairs. 2. *L. procumbens*.

Plants with rather stout erect stems. 3. *L. Nuttallii*.

Petaliferous flowers loosely paniculate. 4. *L. violacea*.

Flower-clusters of both the petaliferous and apetalous flowers sessile or nearly so.

Leaflets with oblong oval or suborbicular blades.

Stem and leaves closely and softly pubescent. 5. *L. Stuvei*.

Stem and leaves glabrate or thinly appressed-pubescent.

6. *L. frutescens*.

Leaflets with linear or linear-oblong blades. 7. *L. Virginica*.

Plants with complete flowers: corolla whitish or yellowish: pod shorter than the calyx or rarely a little longer.

Leaflets with oblong to suborbicular blades.

Peduncles surpassing the leaves.

8. *L. hirta*.

Peduncles shorter than the leaves.

9. *L. capitata*.

Leaflets with linear blades.

10. *L. angustifolia*.

1. *Lespedeza repens* (L.) Bart. CREEPING BUSH-CLOVER. (Man. p. 563; I. F. f. 2192.) In dry or sandy soil, L. I. to Fla., Minn., and Tex.

—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; LANCASTER; COLUMBIA; HUNTINGDON; ALLEGHENY.

2. *Lespedeza procumbens* Michx. TRAILING BUSH-CLOVER. (Man. p. 563; I. F. f. 2193.) In dry soil, Mass. to Fla., west to the I. Terr. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; HUNTINGDON.

3. *Lespedeza Nuttallii* Darl. NUTTALL'S BUSH-CLOVER. (Man. p. 563; I. F. f. 2194.) Dry soil, southern N. Eng. and N. Y. to Mich., Fla. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; MONTGOMERY; FRANKLIN; MONTOUR; ALLEGHENY.

4. *Lespedeza violacea* (L.) Pers. BUSH-CLOVER. (Man. p. 563; I. F. f. 2195.) In dry soil, N. Eng. to Fla., west to Minn., Kans., La. and northern Mex. — *Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; ALLEGHENY.

5. *Lespedeza Stuvei* Nutt. STUVE'S BUSH-CLOVER. (Man. p. 564; I. F. f. 2196.) Dry soil, L. I. to Va., west to Mich. and the I. Terr.—*Pennsylvania*: PHILADELPHIA; LANCASTER.

5a. *L. Stuvei neglecta* Britton. (Man. p. 564.) N. J. to N. C., Ga., Mo. and Tex.—*Pennsylvania*: PHILADELPHIA.

6. *Lespedeza frutescens* (L.) Britton. WAND-LIKE BUSH-CLOVER. (Man. p. 564; I. F. f. 2197.) Dry soil, Mass. to Mich., south to Fla., Ill. and Tex.—*Pennsylvania*: DELAWARE.

7. *Lespedeza Virginica* (L.) Britton. SLENDER BUSH-CLOVER. (Man. p. 564; I. F. f. 2198.) Dry soil, Mass. to Minn., south to Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; DELAWARE; ALLEGHENY.

8. *Lespedeza hirta* (L.) Ell. HAIRY BUSH-CLOVER. (Man. p. 564; I. F. f. 2199.) Dry soil, Me. and Ont. to Fla. west to Ill., Minn. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; MONTGOMERY; MONTOUR; LANCASTER; BERKS; LEBANON; FRANKLIN; HUNTINGDON; VENANGO; ALLEGHENY.

9. *Lespedeza capitata* Michx. ROUND-HEADED BUSH-CLOVER. (Man. p. 564; I. F. f. 2200.) Dry fields, Ont. and Me. to Fla., Minn., Neb. and La.—*Pennsylvania*: ALLEGHENY.

10. *Lespedeza angustifolia* (Pursh) Ell. NARROW-LEAVED BUSH-CLOVER. (Man. p. 564; I. F. f. 2201.) Dry sandy soil, eastern Mass. to Fla., west to Mich. and La.—*Pennsylvania*: DELAWARE.

20. GALACTIA P. Br.

Pods sparingly pubescent: plants glabrous or nearly so.

1. *G. regularis*.

Pods copiously pubescent: plant closely pubescent.

2. *G. volubilis*.

1. *Galactia regularis* (L.) B.S.P. MILK PEA. (Man. p. 570; I. F. f. 2228.) In dry sandy soil, southeastern N. Y., Pa., pine barrens of N. J., south to Fla. and Miss.—*Pennsylvania*: BERKS, near Reading; LANCASTER, Cedar Hill.

2. *Galactia volubilis* (L.) Britton. DOWNY MILK PEA. (Man. p. 570; I. F. f. 2229.) In dry soil, southeastern N. Y. to Fla., west to Pa., Ky. and Tex.—*Pennsylvania*: BERKS, near Reading.

21. FALCATA Gmel.

1. *Falcata comosa* (L.) Kuntze. WILD OR HOG PEA-NUT. (Man. p. 569; I. F. f. 2225.) Moist thickets, N. B. to Fla., west to Lake Superior, Neb. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; ERIE; ALLEGHENY.

22. BRADBURYA Raf.

1. *Bradburya Virginiana* (L.) Kuntze. SPURRED BUTTERFLY-PEA. (Man. p. 568; I. F. f. 2223.) Dry sandy soil, N. J. to Fla., west to Ark. and Tex.—*Pennsylvania*: Locally escaped from gardens in the southeastern counties.

23. CLITORIA L.

1. *Clitoria Mariana* L. BUTTERFLY-PEA. (Man. p. 569; I. F. f. 2224.) Dry soil, N. J., south to Fla., west to Mo. and Tex.—*Pennsylvania*: PHILADELPHIA, on the Wissahickon; LANCASTER.

24. APIOS Moench.

1. *Apios Apios* (L.) MacM. GROUND-NUT. (Man. p. 569; I. F. f. 2227.) In moist ground, N. B. to Fla., west to western Ont., Minn., Kans. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; YORK; PERRY; CRAWFORD; ALLEGHENY.

25. PHASEOLUS L.

1. *Phaseolus polystachyus* (L.) B.S.P. WILD BEAN OR BEAN VINE. (Man. p. 571; I. F. f. 2234.) In thickets, Can. south to Fla., west to Minn., Neb. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; DAUPHIN; ERIE, Presque Isle; DELAWARE.

26. STROPHOSTYLES Ell.

Leaflets with mainly lobed blades: pods 5-8 cm. long.

1. *S. helvola*.

Leaflets with mainly entire blades: pods 2-5 cm. long.

2. *S. umbellata*.

1. *Strophostyles helvola* (L.) Britton. TRAILING WILD BEAN. (Man. p. 571; I. F. f. 2235.) In sandy soil, eastern Mass. to Fla., west to Tex. Also from Quebec to Minn. and south in the Miss. Valley.—*Pennsylvania*: NORTHAMPTON, Bethlehem; BUCKS; PHILADELPHIA; CHESTER; ERIE, Presque Isle; DELAWARE.

2. *Strophostyles umbellata* (Muhl.) Britton. PINK WILD BEAN. (Man. p. 571; I. F. f. 2236.) In sandy soil, L. I. to Fla., Ind. and La. *Pennsylvania*:—BUCKS; DELAWARE; CHESTER; LANCASTER.

27. VICIA L.

A. Flowers in racemes or spikes terminating elongated peduncles.

a. Plants perennial: native species.

Raceme densely many-flowered.

Standard with the claw and blade of about equal length.

1. *V. Cracca*.

Standard with the claw $\frac{1}{2}$ the length of the blade.

2. *V. villosa*.

Racemes lax, relatively few-flowered.

Corolla 16-21 mm. long.

Corolla 9-11 mm. long.

b. Plants annual : introduced species.

Pods glabrous, 3-6-seeded.

Pods pubescent, 2-seeded.

B. Flowers solitary or few and nearly sessile in the axils.

Leaflets with oblong, oval or obovate blades.

Leaflets with linear or linear-oblong blades.

3. *V. Americana*.

4. *V. Caroliniana*.

5. *V. tetrasperma*.

6. *V. hirsuta*.

7. *V. sativa*.

8. *V. angustifolia*.

1. **Vicia Cracca** L. COW OR BLUE VETCH. (Man. p. 565; I. F. f. 2204.) In dry soil, Newf. to B. C., south to N. Y., N. J., Ky. and Iowa. Also in Eu. and Asia.—*Pennsylvania* : MONROE; NORTHAMPTON; BUCKS; DELAWARE; LANCASTER.

2. **Vicia villosa** Roth. (Man. p. 565.) Escaped in eastern Pa. Nat. of Eu.—*Pennsylvania* : BUCKS, Penn Valley.

3. **Vicia Americana** Muhl. AMERICAN VETCH. (Man. p. 565; I. F. f. 2205.) In moist ground, N. B. to N. C., south to Va., Ky. and Nev.—*Pennsylvania* : NORTHAMPTON; MONROE; BUCKS; CHESTER; LANCASTER; HUNTINGDON; CENTRE.

4. **Vicia Caroliniana** Walt. CAROLINA VETCH. (Man. p. 566; I. F. f. 2207.) River banks and cliffs, Ont. to Minn., south to Ga., Ky. and Kans.—*Pennsylvania* : NORTHAMPTON; BUCKS; LANCASTER; YORK; PERRY; SUSQUEHANNA; FRANKLIN; SOMERSET; ALLEGHENY.

5. **Vicia tetrasperma** (L.) Moench. SLENDER VETCH. SMOOTH TARE. (Man. p. 566; I. F. f. 2210.) In meadows and waste places, N. S. and Ont. to Va. Nat. from Eu. Native also of northern Asia.—*Pennsylvania* : MONROE; PHILADELPHIA; DELAWARE.

6. **Vicia hirsuta** (L.) Koch. HAIRY VETCH OR TARE. (Man. p. 566; I. F. f. 2211.) In fields and waste places, Va. to Ohio and N. B. Nat. from Eu. Native also of Asia.—*Pennsylvania* : CHESTER.

7. **Vicia sativa** L. COMMON VETCH OR TARE. (Man. p. 566; I. F. f. 2212.) In fields and waste places, eastern and central United States and on the Pacific coast. Adv. from Eu.—*Pennsylvania* : PHILADELPHIA; DELAWARE; LANCASTER; ALLEGHENY.

8. **Vicia angustifolia** Roth. SMALLER COMMON VETCH. (Man. p. 566; I. F. f. 2213.) In fields and waste places, N. S. to Fla., mostly near the coast. Nat. from Eu.—*Pennsylvania* : PHILADELPHIA, waste places.

28. LATHYRUS L.

Stipules large and foliaceous, half-hastate or half-cordate.

Corolla purple.

Corolla cream-colored.

Stipules half-sagittate or very small or wanting.

Leaflets with ovate or oval blades : racemes 10-20-flowered.

Leaflets with oblong blades : racemes 2-6-flowered.

1. *L. maritimus*.

2. *L. ochroleucus*.

3. *L. venosus*.

4. *L. myrtifolius*.

1. **Lathyrus maritimus** (L.) Bigel. BEACH OR SEA PEA. (Man. p. 567; I. F. f. 2215.) Sea-beaches, N. J. to Arctic Am., shores of the

Great Lakes and on the Pacific coast. Also in northern Eu. and Asia.—*Pennsylvania*: ERIE, Presque Isle; CLINTON.

2. *Lathyrus ochroleucus* Hook. CREAM-COLORED VETCHLING. (Man. p. 568; I. F. 2221.) On river banks and hillsides, N. J., Pa. to N. Eng., Quebec and Arctic Am., west to Iowa, N. Dak., Wash. and B. C.—*Pennsylvania*: BLAIR; CENTRE.

3. *Lathyrus venosus* Muhl. VEINY PEA. (Man. p. 567; I. F. f. 2216.) River shores and banks, western N. J. and Pa. to Ind. and Assiniboia, south to Ga., La. and Kans.—*Pennsylvania*: NORTHAMPTON, Bethlehem; YORK; PERRY; SUSQUEHANNA; WESTMORELAND.

4. *Lathyrus myrtifolius* Muhl. MYRTLE-LEAVED MARSH PEA. (Man. p. 567; I. F. f. 2218.) In moist or wet grounds, N. B. to Man., south to N. C. and Tenn.—*Pennsylvania*: MONROE; LUZERNE; NORTHAMPTON; LANCASTER; BERKS; HUNTINGDON; DELAWARE.

Order 15. GERANIALES.

Stigmas or styles all distinct or all united, neither cleft nor foliaceous.

Anther-sacs opening by longitudinal valves.

Plants destitute of secreting glands or cells in the tissues.

Styles united around a central column from which they break at maturity.

Fam. 1. GERANIACEAE.

Styles distinct or permanently united.

Leaves simple.

Fam. 2. LINACEAE.

Leaves compound.

Fam. 3. OXALIDACEAE.

Plants with secreting glands, these often in the leaves, sometimes in the bark.

Leaf-blades punctate by oil glands.

Fam. 4. RUTACEAE.

Leaf-blades without oil glands.

Fam. 5. SIMARUBACEAE.

Anthers opening by terminal pores.

Fam. 6. POLYGALACEAE.

Stigmas or styles distinct or cleft, or foliaceous, or united by pairs.

Perianth present: stamens several, or only one when the flowers are in involucre (*Euphorbia*).

Fam. 7. EUPHORBIACEAE.

Perianth wanting: stamen solitary.

Fam. 8. CALLITRICHACEAE.

FAMILY I. GERANIACEAE J. St. Hil. GERANIUM FAMILY.

Carpel-bodies turgid, the tails glabrous within: anthers 10, or rarely 5.

1. GERANIUM.

Carpel-bodies narrow, the tails pubescent within: anthers 5.

2. ERODIUM.

1. GERANIUM L.

Carpel-bodies deciduous from the styles at maturity, each with 2 fibrous appendages at the top: leaf-blades divided.

1. *G. Robertianum*.

Carpel-bodies permanently united to the styles, unappendaged: leaf-blades lobed, cleft or parted.

A. Annual or biennial plants: corolla less than 1.5 cm. wide.

Sepals without subulate tips: seeds smooth.

Carpel-bodies wrinkled: stamens 10.

2. *G. molle*.

Carpel-bodies pubescent: stamens 5.

3. *G. pusillum*.

Sepals with subulate tips: seeds reticulated or pitted.

Sepal-tips less than 1 mm. long.

4. *G. rotundifolium*.

Sepal-tips 1-2 mm. long.

Style-beak and branches less than 3 mm. long. 5. *G. Carolinianum*.

Style-beak and branches over 4 mm. long. 6. *G. columbinum*.

B. Perennial plants with stout rootstocks: corolla over 2 cm. wide.

7. *G. maculatum*.

1. *Geranium Robertianum* L. HERB ROBERT. (Man. p. 573; I. F. f. 2240.) In rocky woods, rarely in sandy places, N. B. and N. S. to Man., south to southern N. Y., N. J., Pa. and Mo. Also in Eu., Asia and northern Africa.—*Pennsylvania*: BUCKS, Nockamixon Cliffs; BERKS; SUSQUEHANNA.

2. *Geranium molle* L. DOVE'S-FOOT CRANE'S-BILL. (Man. p. 574; I. F. f. 2248.) In waste places, Me. to Pa., Ohio and Ont. Also in Wash. and Vancouver. Fugitive from Eu.—*Pennsylvania*: PHILADELPHIA, ballast; BUCKS, Sellersville.

3. *Geranium pusillum* L. SMALL-FLOWERED CRANE'S-BILL. (Man. p. 574; I. F. f. 2247.) In waste places, southern N. Eng. to B. C., south to N. J., Pa. and Ohio. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON; BERKS; FRANKLIN; SOMERSET; ALLEGHENY.

4. *Geranium rotundifolium* L. ROUND-LEAVED CRANE'S-BILL. (Man. p. 574; I. F. f. 2243.) In waste places, Mich., and in ballast about N. Y. Fugitive from Eu. Native also of northern Asia.—*Pennsylvania*: PHILADELPHIA, ballast.

5. *Geranium Carolinianum* L. CAROLINA CRANE'S-BILL. (Man. p. 574; I. F. f. 2244.) In barren soil, N. S. (?), N. Eng. to B. C., south to Fla. and Mex.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; ALLEGHENY.

6. *Geranium columbinum* L. LONG-STALKED CRANE'S-BILL. (Man. p. 574; I. F. f. 2242.) In fields and along roadsides, N. J., Pa., Md. and Va. Also in S. Dak. Nat. or adv. from Eu.—*Pennsylvania*: LANCASTER; YORK, York Furnace; BUCKS; FRANKLIN.

7. *Geranium maculatum* L. WILD OR SPOTTED CRANE'S-BILL. (Man. p. 573; I. F. f. 2239.) In woods, Newf. to Man., south to Ga., Ala. and Mo.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; MONTGOMERY; BUCKS; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; FRANKLIN; ERIE; ALLEGHENY.

2. *ERODIUM* L'Her.

1. *Erodium cicutarium* (L.) L'Her. STORK'S-BILL. ALFILARIA. (Man. p. 575; I. F. f. 2249.) Waste places and fields, N. S. to Mich., south to N. J. and Pa. Also from Tex. to Oregon. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA; LANCASTER; LUZERNE, Kingston; DELAWARE; CHESTER.

FAMILY 2. LINACEAE Dumort. FLAX FAMILY.

1. *LINUM* L.

Corolla blue.

Corolla yellow.

A. Styles distinct.

a. Inner and outer sepals entire, sometimes erose, but not glandular-toothed.

i. *L. usitatissimum*.

- Stems and branches ridged, angled or winged. 2. *L. striatum*.
 Stems and branches terete or essentially so. 3. *L. Virginianum*.
 b. Inner sepals glandular-toothed, outer sepals entire or toothed.
 4. *L. medium*.
 B. Styles partially united. 5. *L. sulcatum*.

1. *Linum usitatissimum* L. FLAX. (Man. p. 578; I. F. f. 2258.)
 Along roadsides, railways and in waste places, fugitive from Eu.—*Penn.*
sylvania: NORTHAMPTON; PHILADELPHIA; DAUPHIN; LANCASTER;
 ERIE; ALLEGHENY.

2. *Linum striatum* Walt. RIDGED YELLOW FLAX. (Man. p. 579; I.
 F. f. 2263.) In bogs and swamps, rarely in drier ground, Ont. to Conn.,
 Fla., Ark. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONT-
 GOMERY; BERKS; CHESTER; DAUPHIN; LEBANON; LANCASTER; CAM-
 BRIA; FAYETTE.

3. *Linum Virginianum* L. WILD OR SLENDER YELLOW FLAX.
 (Man. p. 579; I. F. f. 2260.) In shaded situations, N. Eng. to Ga.—*Penn-*
sylvania: NORTHAMPTON; MONTGOMERY; DELAWARE; CHESTER; LAN-
 CASTER; SCHUYLKILL; FRANKLIN; COLUMBIA; CENTRE; ALLEGHENY.

4. *Linum medium* (Planch.) Britton. STIFF YELLOW FLAX. (Man.
 p. 579; I. F. f. 2262.) In dry soil, Ont. to Fla. and Tex.—*Pennsylvania*:
 ERIE, Presque Isle.

5. *Linum sulcatum* Riddell. GROOVED YELLOW FLAX. (Man. p.
 579; I. F. f. 2264.) In dry soil, Ont. to Man., south to Ga., west to Tex.,
 rare near the Atlantic coast.—*Pennsylvania*: LACKAWANNA; HUNTING-
 DON, Birmingham.

FAMILY 3. OXALIDACEAE Lindl. WOOD-SORREL FAMILY.

1. OXALIS L.

Plants acaulescent: corolla white, pink or rose-purple.

Scape terminated by a single flower: corolla pink: capsule globular.

1. *O. Acetosella*.

Scape terminated by several flowers: corolla rose-purple: capsule ovoid.

2. *O. violacea*.

Plants caulescent: corolla yellow.

Stems and petioles strigilose with decidedly appressed hairs.

3. *O. stricta*.

Stems and petioles villous or with loosely spreading hairs.

Pedicels with erect or appressed hairs.

Longer filaments glabrous.

Sepals ciliate nearly all around: leaflets bright green. 4. *O. Bushii*.

Sepals ciliate only at the apex: leaflets reddish purple.

5. *O. rufa*.

Longer filaments ciliate above or throughout.

Sepals ciliate nearly all around: petals 6-10 mm. long: leaflets wholly
 green. 6. *O. Brittoniae*.

Sepals ciliate only at the apex or near it: petals 12-16 mm. long: leaf-
 lets brown margined. 7. *O. grandis*.

Pedicels with villous hairs.

8. *O. cymosa*.

1. *Oxalis Acetosella* L. WHITE OR TRUE WOOD-SORREL. (Man. p. 576; I. F. f. 2250.) In cold damp woods, N. S. to Man., the mountains of N. C.—*Pennsylvania*: WAYNE; LACKAWANNA; TOGA; MONROE; CARBON; BLAIR; CAMBRIA; CLEARFIELD; ERIE; SOMERSET.

2. *Oxalis violacea* L. VIOLET WOOD-SORREL. (Man. p. 576; I. F. f. 2251.) In woods, northern N. Eng. to Minn. and the Rocky Mts., south to Fla. and N. Mex.—*Pennsylvania*: NORTHAMPTON; PIKE; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; YORK; CENTRE; ALLEGHENY.

3. *Oxalis stricta* L. UPRIGHT YELLOW WOOD-SORREL. (Man. p. 576; I. F. f. 2254.) In woods and fields, N. S. to N. Dak. and Colo., south to Fla. and Tex.—*Pennsylvania*: MONROE; BUCKS; ALLEGHENY; LANCASTER.

4. *Oxalis Bushii* Small. BUSH'S WOOD-SORREL. (Man. p. 577.) In dry soil, Pa., Mo. and Ark.—*Pennsylvania*: BRADFORD.

5. *Oxalis rufa* Small. RED WOOD-SORREL. (Man. p. 577.) In woods, Mass. to N. Y., Ga. and Tenn.—*Pennsylvania*: MONROE.

6. *Oxalis Brittoniae* Small. (Man. p. 577.) In woods and fields, N. Y. to N. C. and Tenn.—*Pennsylvania*: MONROE, Tannersville; LANCASTER.

7. *Oxalis cymosa* Small. TALL YELLOW WOOD-SORREL. (Man. p. 577; I. F. f. 2256.) In woods and fields, Ont. to Mich., Fla., Neb. and Tex. *Pennsylvania*: NORTHAMPTON; BUCKS; DAUPHIN; COLUMBIA; FRANKLIN; CHESTER.

8. *Oxalis grandis* Small. GREAT YELLOW WOOD-SORREL. (Man. p. 577; I. F. f. 2257.) On river banks, Pa. to Ill., N. C. and Tenn.—*Pennsylvania*: FRANKLIN; ALLEGHENY.

FAMILY 4. RUTACEAE Juss. RUE FAMILY.

Fruit dehiscent, capsular.

1. XANTHOXYLUM.

Fruit indehiscent, samaroid.

2. PTELEA.

1. XANTHOXYLUM L.

1. *Xanthoxylum Americanum* Mill. PRICKLY ASH. TOOTHACHE-TREE. (Man. p. 581; I. F. f. 2269.) In woods and thickets, Quebec to Va., west to Minn., Neb. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; BERKS; LANCASTER; FRANKLIN; HUNTINGDON; LACKAWANNA; ALLEGHENY.

2. PTELEA L.

1. *Ptelea trifoliata* L. THREE-LEAVED HOP-TREE. (Man. p. 581; I. F. f. 2271.) In woods, L. I. to Fla., west to Minn., Tex. and northern Mex. Escaped from cult.—*Pennsylvania*: NORTHAMPTON; BERKS; PHILADELPHIA.

FAMILY 5. **SIMARUBACEAE** DC. AILANTHUS FAMILY.1. **AILANTHUS** Desf.

1. *Ailanthus glandulosa* Desf. TREE OF HEAVEN. AILANTHUS. (Man. p. 582; I. F. f. 2272.) Escaped, along roadsides and in fields in southern Ont., and in the eastern U. S.—*Pennsylvania*; NORTHAMPTON; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

FAMILY 6. **POLYGALACEAE** Reichenb. MILKWORT FAMILY.1. **POLYGALA** L.

Flowers several or many in terminal often spike-like racemes.

Racemes spike-like.

Corolla orange-yellow: basal leaves persistent with spatulate or obovate blades. 1. *P. lutea*.

Corolla not yellow: basal leaves early deciduous.

Leaves, at least those at the lower nodes, whorled.

Racemes 8–18 mm. thick.

2. *P. cruciata*.

Racemes 4–6 mm. thick.

Leaves prevailingly whorled: wings as long as the capsule.

3. *P. verticillata*.

Leaves prevailingly alternate: wings shorter than the capsule.

4. *P. ambigua*.

Leaves all alternate.

Petals united into a cleft tube 6–8 mm. long.

5. *P. incarnata*.

Petals not united into a long tube.

Racemes abbreviated.

Racemes over 11 mm. thick.

6. *P. viridescens*.

Racemes less than 11 mm. thick.

7. *P. Nuttallii*.

Racemes elongated.

8. *P. Senega*.

Racemes lax, not spike-like.

9. *P. polygama*.

Flowers 1–4, axillary to leaf-like bracts.

10. *P. paucifolia*.

1. *Polygala lutea* L. ORANGE MILKWORT. (Man. p. 583; I. F. f. 2275.) In pine-barren swamps, L. I., N. Y., south to Fla. and La.—*Pennsylvania*: BUCKS, Bristol.

2. *Polygala cruciata* L. MARSH MILKWORT. (Man. p. 583; I. F. f. 2276.) In sandy swamps, Me. to Fla., west to Minn. and La.—*Pennsylvania*: BUCKS, Bristol; MONTGOMERY; DELAWARE; CHESTER; LANCASTER.

3. *Polygala verticillata* L. WHORLED MILKWORT. (Man. p. 583; I. F. f. 2278.) In dry or moist soil, mostly in fields, southern Quebec to Minn., south to Fla. and Mex.—*Pennsylvania*: NORTHAMPTON; LEHIGH; LUZERNE; BUCKS; DELAWARE; LANCASTER; CHESTER; PERRY; FRANKLIN; HUNTINGDON; ALLEGHENY.

4. *Polygala ambigua* Nutt. LOOSE-SPIKED MILKWORT. (Man. p. 584; I. F. f. 2279.) In dry soil, N. J. and Pa. to Ga., Tenn. and La.—*Pennsylvania*: DELAWARE; CHESTER; LANCASTER; YORK; COLUMBIA; ALLEGHENY.

5. *Polygala incarnata* L. PINK MILKWORT. (Man. p. 584; I. F. f. 2280.) In dry soil, Ont. and Wis. to N. J. and Pa.; Fla. and Mex.—*Pennsylvania*: CHESTER; LANCASTER; HUNTINGDON.

6. *Polygala viridescens* L. FIELD OR PURPLE MILKWORT. (Man. p. 584; I. F. f. 2281.) In fields and meadows, Ont. to Minn., N. Eng., N. C. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; CRAWFORD; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

7. *Polygala Nuttallii* T. & G. NUTTALL'S MILKWORT. (Man. p. 584; I. F. f. 2284.) In dry sandy soil, Mass. to N. C., Ala. and Mo.—*Pennsylvania*: PIKE; BUCKS; DELAWARE; TINICUM; CHESTER; LANCASTER; FRANKLIN.

8. *Polygala Senega* L. SENECA SNAKEROOT. MOUNTAIN FLAX. (Man. p. 584; I. F. f. 2285.) In rocky woods, N. B., to Minn. and the Canadian Rocky Mts., south to N. C. and Mo.—*Pennsylvania*: BUCKS; PHILADELPHIA; CHESTER; LANCASTER; HUNTINGDON; BLAIR.

9. *Polygala polygama* Walt. RACEMED MILKWORT. (Man. p. 585; I. F. f. 2287.) In dry soil, N. S. to the Lake of the Woods, south to Fla. and Tex.—*Pennsylvania*: PHILADELPHIA; ERIE.

10. *Polygala paucifolia* Willd. FLOWERING WINTERGREEN. FRINGED MILKWORT. (Man. p. 585; I. F. f. 2288.) In moist rich woods, N. B. and Anticosti to the Saskatchewan, south to Ga. and Ill.—PIKE; MONROE; NORTHAMPTON; BERKS; LEHIGH; CHESTER; LANCASTER; DAUPHIN; PERRY; SCHUYLKILL; TOGA; FRANKLIN; FULTON; BEDFORD; HUNTINGDON; SOMERSET.

FAMILY 7. EUPHORBIACEAE J. St. Hil. SPURGE FAMILY.

Flowers not in an involucre: calyx always present.

Ovules 2 in each cavity of the ovary.

1. PHYLLANTHUS.

Ovule 1 in each cavity of the ovary.

Plants clothed with stellate pubescence or scales.

Ovary and dehiscent capsule 2-4-celled, mostly 3-celled.

2. CROTON.

Ovary and indehiscent achene-like capsule 1-celled.

Plants pubescent with simple or merely gland-tipped hairs, or glabrous.

Inflorescence spicate: leaf-blades not peltate.

4. ACALYPHA.

Inflorescence racemose or paniculate: leaf-blades peltate.

5. RICINUS.

Flowers in an involucre, the calyx represented by a minute scale at the base of the filament-like pedicel.

6. EUPHORBIA.

1. PHYLLANTHUS L.

1. *Phyllanthus Carolinensis* Walt. CAROLINA PHYLLANTHUS. (Man. p. 586; I. F. f. 2289.) In sandy or gravelly soil, eastern Pa. to Ill., Fla., Tex. and C. Am. *Pennsylvania*: LANCASTER; YORK, on Susquehanna; CHESTER.

2. CROTON L.

1. *Croton glandulosus* L. GLANDULAR CROTON. (Man. p. 586; I. F. f. 2290.) In sandy soil, Va. to Iowa and Kans., south to Fla. and

C. Am. Also in the W. I. and S. Am. *Pennsylvania*: PHILADELPHIA, on or near ballast.

3. CROTONOPSIS Michx.

1. *Crotonopsis linearis* Michx. CROTONOPSIS. (Man. p. 587; I. F. f. 2294.) In dry sandy soil, N. J. to Kans., south to Fla. and Tex. *Pennsylvania*: BUCKS, Bristol.

4. ACALYPHA L.

Staminate and pistillate flowers in separate spikes: capsule spiny.

1. *A. ostryaefolia*.

Staminate and pistillate flowers in the same spikes: capsules smooth.

Plant pubescent: bracts palmately lobed, equalling or exceeding the staminate spike.

2. *A. Virginica*.

Plant glandular: bracts many-cleft, shorter than the staminate spike.

3. *A. gracilens*.

1. *Acalypha ostryaefolia* Ridd. HORNBEAM THREE SEEDED MERCURY. (Man. p. 588; I. F. f. 2297.) N. J. to Kans., Fla. and Mex.—*Pennsylvania*: BUCKS, Morrisville.

2. *Acalypha Virginica* L. VIRGINIA THREE-SEEDED MERCURY. (Man. p. 588; I. F. f. 2298.) In woods and thickets, Ont. and Minn., south to Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

3. *Acalypha gracilens* A. Gray. SLENDER THREE-SEEDED MERCURY. (Man. p. 588; I. F. f. 2299.) In dry woods and thickets, R. I. to Kans., Fla. and Tex.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; FRANKLIN.

5. RICINUS L.

1. *Ricinus communis* L. CASTOR-OIL PLANT. (Man. p. 589; I. F. f. 2304.) In waste places, N. J. to Fla. and Tex. Nat. of the tropics.—*Pennsylvania*: Locally escaped from gardens throughout the state.

6. EUPHORBIA L.

Glands of the involucre with petal-like appendages.

Leaves opposite: leaf-blades inequilateral, oblique at the base.

Leaf-blades entire: seeds smooth: plants glabrous. 1. *E. polygonifolia*.

Leaf-blades toothed: seeds wrinkled: plants more or less pubescent.

Plants branched at the base, the branches prostrate.

Involucres not split: stems with appressed hairs.

2. *E. maculata*.

Involucres split: stems with spreading hairs.

3. *E. hirsuta*.

Plants not branched at the base, erect or ascending.

4. *E. nutans*.

Leaves alternate or scattered on the stem: leaf-blades equilateral.

Bracts and leaves of the inflorescence small, green: seeds pitted.

5. *E. corollata*.

Bracts and leaves of the inflorescence large, white-margined: seeds reticulate-tuberculate.

6. *E. marginata*.

Glands of the involucre without petal-like appendages.

a. Leaves mainly opposite.

Plants pubescent.

Plants glabrous.

Plants slender : stems or branches forked.

Plants annual : stem branched at the base : leaf-blades inequilateral.

1. *E. polygonifolia*.

Plants perennial : stems several from a stout root : leaf-blades equilateral.

8. *E. Ipecacuanhae*.

Plants stout : stem topped by an umbel.

9. *E. Lathyris*.

b. Leaves alternate or scattered.

Leaf-blades serrulate : involucre with oblong, oval or orbicular glands.

Seeds smooth or faintly reticulated.

11. *E. platyphylla*.

Seeds strongly and prominently reticulated.

12. *E. Helioscopia*.

Leaf-blades entire : involucre with reniform or crescent-shaped glands.

Plants annual or biennial : seeds pitted.

Capsules with 2-crested lobes.

13. *E. Peplus*.

Capsules with rounded lobes.

14. *E. commutata*.

Plants perennial : seeds smooth.

Glands of the involucre without horns.

10. *E. Darlingtonii*.

Glands of the involucre with horns.

Stem-leaves 4-12 mm. wide : capsules smooth.

Bracts subtending the umbel lanceolate or oblanceolate.

15. *E. Esula*.

Bracts subtending the umbel oval or obovate.

16. *E. lucida*.

Stem-leaves 0.5-3 mm. wide : capsules with granular lobes.

17. *E. Cyprissias*.

1. *Euphorbia polygonifolia* L. SEASIDE OR KNOTWEED SPURGE. (Man. p. 591; I. F. f. 2307.) In sand along the Atlantic coast, N. H. to Fla., and on the shores of the Great Lakes.—*Pennsylvania*: ERIE, Presque Isle; CLINTON.

2. *Euphorbia maculata* L. MILK SPURGE. (Man. p. 592; I. F. f. 2314.) Throughout N. Am., except the extreme north. Apparently introd. west of the Rocky Mts.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

3. *Euphorbia hirsuta* (Torr.) Wiegand. HAIRY SPURGE. (Man. p. 592; I. F. f. 2314a.) In sandy or gravelly soil, Quebec and Ont. to Conn., N. Y. and Pa.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; YORK; CRAWFORD.

4. *Euphorbia nutans* Lag. LARGE OR UPRIGHT SPOTTED SPURGE. (Man. p. 593; I. F. f. 2319.) In fields and thickets throughout eastern N. Am., except the extreme north, extending west to Rocky Mts.—*Pennsylvania*: NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

5. *Euphorbia corollata* L. BLOOMING OR FLOWERING SPURGE. (Man. p. 593; I. F. f. 2321.) In dry soil, Mass. and Ont. to Minn. and Kans., south to Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; ALLEGHENY.

6. *Euphorbia marginata* Pursh. WHITE-MARGINED SPURGE. (Man. p. 594; I. F. f. 2322.) Introd. from the West into waste places in the

Central and Atlantic States.—*Pennsylvania*: NORTHAMPTON; BUCKS; FRANKLIN; HUNTINGDON; CENTRE.

7. *Euphorbia dentata* Michx. TOOTHED SPURGE. (Man. p. 594; I. F. f. 2324.) In dry or moist soil, Pa. to S. Dak., Tenn., La. and Mex.—*Pennsylvania*: LANCASTER.

8. *Euphorbia Ipecacuanhae* L. WILD IPECAC. IPECAC SPURGE. (Man. p. 594; I. F. f. 2325.) In dry sandy soil, Conn. to Fla., mostly near the coast. Also in southern Ind.—*Pennsylvania*: BUCKS, Turkey Hill; CRAWFORD.

9. *Euphorbia Lathyris* L. CAPER OR MYRTLE SPURGE. (Man. p. 594; I. F. f. 2327.) In waste places, N. J. to N. C. Also in Calif. Native of Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; LEBANON; FRANKLIN.

10. *Euphorbia Darlingtonii* A. Gray. DARLINGTON'S SPURGE. (Man. p. 594; I. F. f. 2328.) N. Y., Pa. and N. J. to N. C.—*Pennsylvania*: CHESTER; LANCASTER; FRANKLIN; CENTRE.

11. *Euphorbia platyphylla* L. BROAD-LEAVED SPURGE. (Man. p. 595; I. F. f. 2330.) Along the shores of the St. Lawrence River and the Great Lakes. Nat. from Eu.—*Pennsylvania*: ERIE; CLINTON.

12. *Euphorbia Helioscopia* L. SUN SPURGE. WARTWEED. (Man. p. 595; I. F. f. 2332.) In waste places in the valley of the St. Lawrence and along the Great Lakes, extending south to N. H., N. Y. and Ohio. Nat. from Eu.—*Pennsylvania*: ERIE; CLINTON.

13. *Euphorbia Peplus* L. PETTY SPURGE. (Man. p. 595; I. F. f. 2333.) In waste places, western N. Y. to N. J. and Pa. Adv. from Eu.—*Pennsylvania*: LANCASTER; NORTHAMPTON, streets of Easton; ALLEGHENY.

14. *Euphorbia commutata* Engelm. TINTED SPURGE. (Man. p. 595; I. F. f. 2334.) On hillsides, Pa. to Minn., Fla. and Mo.—*Pennsylvania*: LANCASTER, Safe Harbor; FRANKLIN; CENTRE; ALLEGHENY.

15. *Euphorbia Esula* L. LEAFY SPURGE. (Man. p. 595; I. F. f. 2335.) In waste places, Mass. to N. Y. and Mich. Nat. from Eu.—*Pennsylvania*: FRANKLIN.

16. *Euphorbia lucida* Waldst. & Kit. SHINING SPURGE. (Man. p. 596; I. F. f. 2336.) In fields, southern N. Y. and Pa. Nat. from Eu.—*Pennsylvania*: SUSQUEHANNA.

17. *Euphorbia Cyparissias* L. CYPRESS SPURGE. (Man. p. 596; I. F. f. 2337.) Waste places, N. Eng. to Va. and to Kans. Nat. from Eu.—*Pennsylvania*: MONROE; PIKE; NORTHAMPTON; BUCKS; LANCASTER; ALLEGHENY.

FAMILY 8. CALLITRICHACEAE Lindl. WATER STARWORT FAMILY

1. CALLITRICHE L.

Fruit manifestly pedicelled.

1. *C. Austinii*.

Fruit sessile.

Bracts present.

Styles much shorter than the fruit.

2. *C. palustris*.

Styles fully as long as the fruit.

3. *C. heterophylla*.

Bracts wanting.

4. *C. bifida*.

1. *Callitriche Austinii* Engelm. TERRESTRIAL WATER-STARWORT. (Man. p. 596; I. F. f. 2339.) In damp, shaded places, N. Y. and N. J. to Mo. and Tex.—*Pennsylvania*: BUCKS; MONROE, Tobyhanna Mills.

2. *Callitriche palustris* L. VERNAL WATER-STARWORT. (Man. p. 597; I. F. f. 2340.) Mostly in cold or running water, apparently occurring nearly throughout the U. S. and Can. Also in S. Am., Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; PHILADELPHIA; LACKAWANNA; TIOGA; BLAIR; HUNTINGDON.

3. *Callitriche heterophylla* Pursh. LARGER WATER-STARWORT. (Man. p. 597; I. F. f. 2341.) In ponds and slow streams, N. Eng. to Fla., N. W. Terr., Colo. and La.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS.

4. *Callitriche bifida* (L.) Morong. AUTUMNAL WATER-STARWORT. (Man. p. 597; I. F. f. 2342.) In flowing water, Quebec to Man., Pa. and Ore., south in the Rocky Mts. to Colo. Also in Eu. and Asia.—*Pennsylvania*: BUCKS, Sellersville.

Order 16. SAPINDALES.

Flowers regular, or nearly so, except in Hippocastanaceae, which are shrubs or trees with digitately compound leaves.

Corolla wanting. Fam. 1. BUXACEAE.

Corolla present.

Herbs with tender tissues. Fam. 2. LIMNANTHACEAE.

Shrubs or trees, or rarely herbaceous vines.

Ovary 1-celled (in our representatives): fruit a drupe.

Fam. 3. ANACARDIACEAE.

Ovary 2-several-celled: fruit various.

Leaves simple: blades pinnately veined.

Seed without an aril: fruit drupaceous.

Fam. 4. ILICACEAE.

Seed with an aril: fruit capsular. Fam. 5. CELASTRACEAE.

Leaves simple, the blades palmately veined, or compound.

Leaves opposite.

Fruit a 2-winged samara. Fam. 6. ACERACEAE.

Fruit a capsule.

Flowers regular: fruit a bladderly 3-lobed capsule.

Fam. 7. STAPHYLEACEAE.

Flowers irregular: fruit a leathery globular capsule.

Fam. 8. HIPPOCASTANACEAE.

Leaves alternate.

Fam. 9. SAPINDACEAE.

Flowers very irregular; the posterior sepal a large sac.

Fam. 10. BALSAMINACEAE.

FAMILY I. BUXACEAE Dumort. BOX FAMILY.

1. PACHYSANDRA Michx.

1. *Pachysandra procumbens* Michx. ALLEGHANY MOUNTAIN SPURGE. (Man. p. 599; I. F. f. 2345.) In woods, W. Va. to Fla. and La. Adv. northward.—*Pennsylvania*: DELAWARE, escaped.

FAMILY 2. **LIMNANTHACEAE** Lindl. FALSE MERMAID FAMILY.1. **FLOERKEA** Willd.

1. *Floerkea proserpinacoides* Willd. FALSE MERMAID. (Man. p. 599; I. F. f. 2346.) In marshes and along rivers, Quebec to Ont., Ore., Pa., Tenn., Mo., Utah and Calif.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; LANCASTER; FRANKLIN; WASHINGTON; ALLEGHENY.

FAMILY 3. **ANACARDIACEAE** Lindl. SUMAC FAMILY.

Leaves compound: ovary and drupe not oblique.

1. RHUS.

Leaves simple: ovary and drupe very oblique.

2. COTINUS.

1. **RHUS** L.

Drupe with a pubescent outer coat: stone smooth.

Leaves with 9-13 leaflets: flowers appearing after the leaves.

Leaf-rachis winged.

1. *R. copallina*.

Leaf-rachis terete or nearly so.

Twigs and leaves copiously pubescent: leaflets not glaucous beneath.

2. *R. hirta*.

Twigs and leaves glabrous: leaflets glaucous beneath.

3. *R. glabra*.

Leaves with 3 leaflets: flowers appearing before the leaves.

4. *R. aromatica*.

Drupe with a glabrous outer coat: stone ribbed.

Leaflets 7-13: shrub or tree.

5. *R. Vernix*.

Leaflets 3: vine.

6. *R. radicans*.

1. *Rhus copallina* L. DWARF OR MOUNTAIN SUMAC. (Man. p. 600; I. F. f. 2347.) In dry soil, Me. and Ont. to Fla., Minn. and Tex.—*Pennsylvania*: PIKE; LACKAWANNA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; CUMBERLAND; DAUPHIN; HUNTINGDON; ARMSTRONG; SUSQUEHANNA; ALLEGHENY.

2. *Rhus hirta* (L.) Sudw. STAGHORN SUMAC. (Man. p. 600; I. F. f. 2348.) In dry or rocky soil, N. S. to Ga., Ont., S. Dak., Mo. and Miss.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; COLUMBIA; LUZERNE; BUCKS; DELAWARE; CHESTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

3. *Rhus glabra* L. SMOOTH UPLAND SUMAC. (Man. p. 600; I. F. f. 2349.) In dry soil, N. S. to B. C., Fla., Miss. and Ariz.—*Pennsylvania*: MONROE; PIKE; LUZERNE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; ALLEGHENY.

4. *Rhus aromatica* Ait. FRAGRANT SUMAC. (Man. p. 601; I. F. f. 2350.) In rocky woods, Ont. and Vt. to Fla., Minn., Kans. and La.—*Pennsylvania*: CUMBERLAND; FRANKLIN; HUNTINGDON; BLAIR; ALLEGHENY.

5. *Rhus Vernix* L. POISON ELDER OR SUMAC. (Man. p. 601; I. F. f. 2352.) In swamps, southern Ont. to R. I., Fla., Minn., Mo. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; LEBANON; BERKS.

6. *Rhus radicans* L. POISON IVY OR OAK. (Man. p. 601; I. F. f. 2353.) Thickets and along fences, N. S. to Fla., Minn., Neb. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; LEBANON; BERKS; MONROE; HUNTINGDON; ALLEGHENY.

2. COTINUS Adans.

1. *Cotinus Cotinus* (L.). AMERICAN OR WILD SMOKE-TREE. (Man. p. 602; I. F. f. 2354.) In open woods, Mo. and Ind. Terr. to Tenn. and Ala. Adv. eastward.—*Pennsylvania*: NORTHAMPTON, Easton, escaped.

FAMILY 4. ILICACEAE Lowe. HOLLY FAMILY.

Corolla of partially united petals: petals oval to obovate.

1. ILEX.

Corolla of distinct petals: petals linear.

2. ILICIOIDES.

1. ILEX L.

Leaves persistent, evergreen; blades thick.

Nutlets ribbed: leaf-blades spiny-toothed.

1. *I. opaca*.

Nutlets not ribbed: leaf-blades not spiny-toothed.

2. *I. glabra*.

Leaves deciduous; blades thin.

Nutlets ribbed.

3. *I. monticola*.

Nutlets not ribbed.

Staminate and pistillate flowers short-pedicelled.

4. *I. verticillata*.

Staminate flowers long- and slender-pedicelled.

5. *I. laevigata*.

1. *Ilex opaca* Ait. AMERICAN HOLLY. (Man. p. 603; I. F. f. 2356.) In moist woods, southern Me. to Fla., Pa., Mo. and Tex.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; DAUPHIN.

2. *Ilex glabra* (L.) A. Gray. INKBERRY. EVERGREEN WINTER-BERRY. (Man. p. 603; I. F. f. 2359.) In sandy soil, eastern Mass. to Fla., west to La., mainly near the coast.—*Pennsylvania*: BUCKS, Bristol.

3. *Ilex monticola* A. Gray. LARGE-LEAVED HOLLY. (Man. p. 604; I. F. f. 2361.) Mountain woods, N. Y. and Pa. to N. C. and Ala.—*Pennsylvania*: LACKAWANNA; WAYNE; MONROE; CENTRE; DAUPHIN, Cold Springs; BEDFORD; SOMERSET.

3a. *I. monticola mollis* (A. Gray) Britton. (Man. p. 604.) In mountain woods, Pa. to Ga.—SUSQUEHANNA; PIKE; MONROE; LACKAWANNA; BLAIR.

4. *Ilex verticillata* (L.) A. Gray. VIRGINIA WINTER-BERRY. BLACK ALDER. (Man. p. 604; I. F. f. 2362.) In swamps, N. S. to Fla., Ont., Wis. and Mo.—*Pennsylvania*: LACKAWANNA; MONROE; LUZERNE; NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; LEBANON; FRANKLIN; BEDFORD; VENANGO.

4a. *I. verticillata cyclophylla* Robinson. MONROE; LUZERNE; ERIE; BUCKS.

4b. *I. verticillata padifolia* S. Wats. (Man. p. 604.) Northern N. Y. to Pa.—LANCASTER, McCall's Island; YORK; VENANGO.

5. *Ilex laevigata* (Pursh) A. Gray. SMOOTH WINTER-BERRY. (Man. p. 604; I. F. f. 2363.) In swamps, Me. to Pa. and Va.—*Pennsylvania*: BUCKS; LANCASTER; MONROE; SCHUYLKILL; ALLEGHENY.

2. ILICIOIDES Dumont.

1. *Illicioides mucronata* (L.) Britton. WILD OR MOUNTAIN HOLLY. (Man. p. 604; I. F. f. 2364.) In swamps, N. S. to Ont., Wis., Ind. and Va.—*Pennsylvania*: BUCKS; NORTHAMPTON; MONROE; PIKE; WAYNE; LACKAWANNA; CARBON; SUSQUEHANNA; CENTRE; CRAWFORD; ERIE.

FAMILY 5. CELASTRACEAE Lindl. STAFF-TREE FAMILY.

Leaves opposite.

1. EUONYMUS.

Leaves alternate.

2. CELASTRUS.

1. EUONYMUS L.

Creeping shrubs: pods shrubby.

Leaf-blades oval to lanceolate.

1. *E. Americanus*.

Leaf-blades obovate.

2. *E. obovatus*.

Upright shrubs or trees: pods smooth.

Corolla purple: cymes 6-15-flowered.

3. *E. atropurpureus*.

Corolla greenish yellow: cymes 3-7-flowered.

4. *E. Europaeus*.

1. *Euonymus Americanus* L. STRAWBERRY BUSH. (Man. p. 605; I. F. f. 2365.) In low woods, southern N. Y. to Fla., Neb. and Tex.,—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; MONTGOMERY; LANCASTER; YORK; BERKS; FAYETTE.

2. *Euonymus obovatus* Nutt. RUNNING STRAWBERRY BUSH. (Man. p. 605; I. F. f. 2366.) In low woods, southern Ont. to Pa., Ind. and Ky.—*Pennsylvania*: BUCKS; CLARION; MERCER; ERIE.

3. *Euonymus atropurpureus* Jacq. BURNING BUSH. WAHOO. (Man. p. 605; I. F. f. 2367.) In woods or thickets. Ont. to Fla., Mont. and the Ind. Terr.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

4. *Euonymus Europaeus* L. SPINDLE-TREE. (Man. p. 605; I. F. f. 2368.) Escaped from cult., N. H., N. Y., Pa. and N. J.—*Pennsylvania*: NORTHAMPTON.

2. CELASTRUS L.

1. *Celastrus scandens* L. SHRUBBY OR CLIMBING BITTERSWEET. (Man. p. 606; I. F. f. 2370.) In rich soil, Quebec to N. C., Man., the Ind. Terr. and N. Mex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; DAUPHIN; LYCOMING; FRANKLIN; HUNTINGDON; FAYETTE; ALLEGHENY.

FAMILY 6. ACERACEAE St. Hil. MAPLE FAMILY.

1. ACER L.

A. Leaf-blades simple.

a. Flowers in lateral clusters.

Clusters expanding before the leaves, sessile or nearly so, not drooping.

Petals wanting or obsolete: ovary pubescent.

1. *A. saccharinum*.

Petals present: ovary glabrous.

2. *A. rubrum*.

Clusters expanding with the leaves, drooping.

Leaf-blades scarcely paler beneath than above: lobes entire or undulate.

3. *A. nigrum*.

Leaf-blades pale or glaucous beneath: lobes coarsely toothed.

4. *A. Saccharum*.

b. Flowers in terminal racemes or panicles.

Flowers in racemes: petals about as long as the sepals; samaras over 2.5 cm. long.

5. *A. Pennsylvanicum*.

Flowers in panicles: petals twice or thrice as long as the sepals; samaras less than 2.5 cm. long.

6. *A. spicatum*.

B. Leaf-blades 3-9-foliolate.

7. *A. Negundo*.

1. *Acer saccharinum* L. SILVER OR SOFT MAPLE. (Man. p. 607; I. F. f. 2372.) Along streams, N. B. to Fla., southern Ont., Dak. N. and the Ind. Terr.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; ALLEGHENY.

2. *Acer rubrum* L. RED OR SCARLET MAPLE. (Man. p. 607; I. F. f. 2373.) In swamps and low grounds, N. B. to Man., Fla. and Tex.—*Pennsylvania*: TIOGA; LACKAWANNA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; FRANKLIN; WESTMORELAND; ALLEGHENY.

3. *Acer nigrum* Michx. BLACK SUGAR MAPLE. (Man. p. 608; I. F. f. 2376.) Ont. and Vt. to Ga., Minn., La. and Ark.—*Pennsylvania*: NORTHAMPTON; HUNTINGDON; ALLEGHENY.

4. *Acer Saccharum* Marsh. SUGAR OR ROCK MAPLE. (Man. p. 607; I. F. f. 2375.) In rich woods, Newf. to Man., south to Fla. and Tex.—*Pennsylvania*: TIOGA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; SOMERSET; ERIE; ALLEGHENY.

5. *Acer Pennsylvanicum* L. STRIPED MAPLE. (Man. p. 608; I. F. f. 2378.) In rocky woods, N. S. to Lake Superior, and along the mountains to Ga. and Tenn.—*Pennsylvania*: BUCKS; MONROE; DAUPHIN, Cold Springs; CENTRE; HUNTINGDON; BLAIR; FAYETTE; SOMERSET.

6. *Acer spicatum* Lam. MOUNTAIN MAPLE. (Man. p. 608; I. F. f. 2379.) Damp rocky woods, Newf. and James' Bay to Man., south, especially along the mountains to N. C., Tenn. and Minn.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; SCHUYLKILL; YORK; FRANKLIN; HUNTINGDON; BERKS; SOMERSET; ERIE; ALLEGHENY.

7. *Acer Negundo* L. BOX ELDER. ASH-LEAVED MAPLE. (Man. p. 608; I. F. f. 2380.) Along streams, Vt. and Ont. to Man., Fla. and N. Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; BERKS; LANCASTER; DAUPHIN; WESTMORELAND, ALLEGHENY.

FAMILY 7. STAPHYLEACEAE DC. BLADDER-NUT FAMILY.

1. STAPHYLEA L.

1. *Staphylea trifolia* L. AMERICAN BLADDER-NUT. (Man. p. 606; I. F. f. 2371.) In moist woods and thickets, Quebec and Ont. to Minn., S. C. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; MONTGOMERY; LANCASTER; FRANKLIN; HUNTINGDON; SOMERSET; ALLEGHENY.

FAMILY 8. **HIPPOCASTANACEAE** T. & G. BUCKEYE FAMILY.1. **AESCULUS** L.

Capsule spiny : stamens exerted.

Corolla white.

1. *A. Hippocastanum*.

Corolla yellow.

2. *A. glabra*.

Capsule smooth : stamen about as long as the petals.

3. *A. octandra*.

1. **Aesculus Hippocastanum** L. HORSE-CHESTNUT. (Man. p. 609 ; I. F. f. 2381.) Escaped from cult., southern N. Y., Pa. and N. J. Native of Asia.—*Pennsylvania* : NORTHAMPTON, Easton.

2. **Aesculus glabra** Willd. FETID OR OHIO BUCKEYE. (Man. p. 609 ; I. F. f. 2382.) Woods, Pa. to Ala., Mich., Neb. and the Ind. Terr.—*Pennsylvania* : LAWRENCE ; FAYETTE ; WESTMORELAND ; ALLEGHENY ; MERCER.

3. **Aesculus octandra** Marsh. YELLOW OR SWEET BUCKEYE. (Man. p. 609 ; I. F. f. 2384.) Woods, Pa. to Ga., Iowa and Tex.—*Pennsylvania* : ALLEGHENY.

FAMILY 9. **SAPINDACEAE** R. Br. SOAPBERRY FAMILY.1. **CARDIOSPERMUM** L.

1. **Cardiospermum Halicacabum** L. BALLOON VINE. HEART SEED. (Man. p. 610 ; I. F. f. 2387.) In waste places, N. J. to Kans. and southward, and in ballast about the sea-ports, escaping northward. Native of tropical Am.—*Pennsylvania* : PHILADELPHIA ; HUNTINGDON.

FAMILY 10. **BALSAMINACEAE** Lindl. JEWEL-WEED FAMILY.1. **IMPATIENS** L.Flowers orange : saccate sepal contracted into a spur $\frac{1}{2}$ as long as the body.1. *I. biflora*.Flowers pale yellow : saccate sepal contracted into a spur $\frac{1}{4}$ or $\frac{1}{3}$ as long as the body.2. *I. aurea*.

1. **Impatiens biflora** Walt. SPOTTED TOUCH-ME-NOT. SILVER-LEAF. (Man. p. 611 ; I. F. f. 2388.) In moist grounds, N. S. to Ore., Alaska, Fla. and Kans.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; HUNTINGDON ; BEDFORD ; ERIE ; ALLEGHENY.

2. **Impatiens aurea** Muhl. PALE TOUCH-ME-NOT. (Man. p. 611 ; I. F. f. 2389.) In similar situations, Quebec to Ore., Ga. and Kans.—*Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; HUNTINGDON ; LUZERNE ; BEDFORD ; ERIE ; ALLEGHENY.

Order 17. **RHAMNALES**.

Fruit a capsule or drupe.

Fam. 1. **RHAMNACEAE**.

Fruit a berry.

Fam. 2. **VITACEAE**.FAMILY 1. **RHAMNACEAE** Dumort. BUCKTHORN FAMILY.

Ovary and disk free from each other : fruit pulpy.

1. **RHAMNUS**.

Ovary and disk adnate : fruit dry.

2. **CEANOTHUS**.

1. RHAMNUS L.

Corolla present: sepals and stamens mostly 4.

Drupe with 3-4 nutlets: leaf-blades of an ovate type.

1. *R. cathartica*.

Drupe with 2 nutlets: leaf-blades of a lanceolate type.

2. *R. lanceolata*.

Corolla wanting: sepals and stamens mostly 5.

3. *R. alnifolia*.

1. *Rhamnus cathartica* L. BUCKTHORN. (Man. p. 612; I. F. f. 2391.) In dry soil, N. Eng., the Middle States and Ont. Introd. from Eu.—*Pennsylvania*: NORTHAMPTON, Easton; DELAWARE.

2. *Rhamnus lanceolata* Pursh. LANCE-LEAVED BUCKTHORN. (Man. p. 612; I. F. f. 2392.) In moist soil, Pa. to Iowa, Neb., Ala. and Tex.—*Pennsylvania*: FRANKLIN; HUNTINGDON.

3. *Rhamnus alnifolia* L'Her. ALDER-LEAVED BUCKTHORN. DWARF ALDER. (Man. p. 612; I. F. f. 2393.) In swamps, N. B. to B. C., N. J., Ill., Neb., Mont. and Calif.—*Pennsylvania*: LANCASTER; HUNTINGDON; CLEARFIELD; ERIE.

2. CEANOTHUS L.

1. *Ceanothus Americanus* L. NEW JERSEY TEA. RED-ROOT. (Man. p. 613; I. F. f. 2396.) In dry open woods, Me. and Ont. to Man., Kans., Fla. and Tex.—*Pennsylvania*: TIOGA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; LAWRENCE; ALLEGHENY.

FAMILY 2. VITACEAE Lindl. GRAPE FAMILY.

Hypogynous disk present: leaf-blades simple.

1. VITIS.

Hypogynous disk wanting or obsolete: leaf-blades digitately 3-7-foliolate.

2. PARTHENOCISSUS.

1. VITIS L.

Leaf-blades woolly or copiously pubescent beneath.

Lower surface of the leaf-blade felty-tomentose: berries 15-20 mm. in diameter, murky.

1. *V. Labrusca*.

Lower surface of the leaf-blade loosely tomentose: berries 8-10 mm. in diameter, not murky.

2. *V. aestivalis*.

Leaf-blades glabrous or nearly so.

Leaf-blades glaucous beneath.

3. *V. bicolor*.

Leaf-blades not glaucous beneath.

Leaves with prominently 3-5-lobed blades.

4. *V. vulpina*.

Leaves with merely coarsely toothed blades, scarcely lobed.

High-climbing vine: leaf-blades mostly over 10 cm. long: berries sour.

5. *V. cordifolia*.

Bushy vine: leaf-blades mostly less than 10 cm. long: berries sweet.

6. *V. rupestris*.

1. *Vitis Labrusca* L. NORTHERN FOX GRAPE. (Man. p. 614; I. F. f. 2398.) Thickets, N. Eng. to Ind., Ga. and Tenn.—*Pennsylvania*: MONROE; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; DAUPHIN; FRANKLIN; HUNTINGDON; WESTMORELAND.

2. *Vitis aestivalis* Michx. SUMMER GRAPE. (Man. p. 614; I. F. f. 2399.) In thickets, southern N. Eng. to Fla., southern Ont., Wis., and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; DAUPHIN; PERRY; PHILADELPHIA; ALLEGHENY.

3. *Vitis bicolor* Le Conte. BLUE OR WINTER GRAPE. (Man. p. 614; I. F. f. 2401.) In woods, N. Y. to Mich., and N. C.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LANCASTER; DAUPHIN; PERRY; ALLEGHENY.

4. *Vitis vulpina* L. RIVERSIDE OR SWEET-SCENTED GRAPE. (Man. p. 614; I. F. f. 2402.) Along rocky river banks, N. S. to Man., Md. and Ark.—*Pennsylvania*:

5. *Vitis cordifolia* Michx. FROST OR CHICKEN GRAPE. (Man. p. 615; I. F. f. 2404.) Moist thickets and along streams, N. Eng. to Neb., Fla and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; PERRY; FRANKLIN; ALLEGHENY.

6. *Vitis rupestris* Scheele. SAND OR SUGAR GRAPE. (Man. p. 615; I. F. f. 2406.) River banks, Pa. to Mo., D. C., Tenn. and Tex.—*Pennsylvania*: LANCASTER; DAUPHIN.

2. PARTHENOCISSUS Planch.

1. *Parthenocissus quinquefolia* (L.) Planch. VIRGINIA CREEPER. AMERICAN IVY. (Man. p. 616; I. F. f. 2410.) In woods and thickets, Quebec to Man., Fla., Tex., and Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; COLUMBIA; HUNTINGDON; ERIE; ALLEGHENY.

Order 18. MALVALES.

Stamens in several groups: anthers 2-celled: embryo straight.

Fam. 1. TILIACEAE.

Stamens monadelphous: anthers 1-celled: embryo curved.

Fam. 2. MALVACEAE.

FAMILY 1. TILIACEAE Juss. LINDEN FAMILY.

1. TILIA L.

Leaf-blades glabrous, or merely tufted in the vein-axils beneath.

1. *T. Americana*.

Leaf-blades silvery white-tomentose beneath.

2. *T. heterophylla*

1. *Tilia Americana* L. BASS-WOOD. AMERICAN LINDEN. WHITE-WOOD. (Man. p. 617; I. F. f. 2411.) In rich woods and along river-bottoms, N. B. to Ga., Man., Neb. and Tex.—*Pennsylvania*: NORTHAMPTON; LUZERNE; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; ERIE; ALLEGHENY.

2. *Tilia heterophylla* Vent. WHITE BASS-WOOD. (Man. p. 617; I. F. f. 2413.) In woods N. Y. to Fla., Ala., Ill., Ky. and Tenn.—*Pennsylvania*: FRANKLIN; HUNTINGDON; SUSQUEHANNA.

FAMILY 2. MALVACEAE Neck. MALLOW FAMILY.

A. Fruit of several radially disposed carpels which separate from each other at maturity: stamen-column anther-bearing at the summit.

a. Carpels 1-seeded.

Involucels of 6-9 bractless.

I. ALTHAEA.

Involucels of 1-3 bractlets or wanting.

Stigma decurrent on the style : involucl of 2 or 3 bractlets.

Stigma terminal : involucl wanting.

2. MALVA.

3. SIDA.

4. ABUTILON.

b. Carpels 2-seeded.

B. Fruit a loculicidal capsule : stamen-column anther-bearing below the summit.

5. KOSTELETSKYA.

6. HIBISCUS.

Carpels 1-seeded : capsules depressed.

Carpels several-seeded : capsules not depressed.

1. ALTHAEA L.*

1. *Althaea officinalis* L. MARSH-MALLOW. (Man. p. 618; I. F. f. 2414.) In salt marshes, or waste places, coast of Mass. and N. Y. and in Pa. Nat. from Eu.—*Pennsylvania* : BUCKS; LANCASTER; ERIE.

2. MALVA L.

Leaf-blades with 5-9 shallow or angular lobes.

Petals 2-4 times as long as the sepals.

1. *M. sylvestris*.

Petals 1-2 times as long as the sepals.

Low plants with procumbent stems.

2. *M. rotundifolia*.

Tall plants with erect stems.

3. *M. verticillata*.

Leaf-blades with 5-7 prominent lobes, or pinnatifid.

Carpels closely pubescent : stem-leaves 1-3-pinnatifid.

4. *M. moschata*.

Carpels glabrous : stem-leaves deeply lobed.

5. *M. Alcea*.

1. *Malva sylvestris* L. HIGH MALLOW. (Man. p. 618; I. F. f. 2415.) In waste places and along roadsides, sparingly adv. from Eu., in the U. S., Can. and Mex.—*Pennsylvania* : MONROE; BUCKS; BERKS; NORTHAMPTON; LANCASTER; ALLEGHENY.

2. *Malva rotundifolia* L. LOW MALLOW. CHEESES. (Man. p. 618; I. F. f. 2416.) In waste places, throughout the northern States. Nat. from Eu.—*Pennsylvania* : MONROE; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; FRANKLIN; ALLEGHENY.

3. *Malva verticillata* L. WHORLED MALLOW. (Man. p. 618; I. F. f. 2417.) In waste places, eastern U. S. Fugitive or adv. from Eu.—*Pennsylvania* : BUCKS.

4. *Malva moschata* L. MUSK MALLOW OR ROSE. (Man. p. 619; I. F. f. 2418.) In waste places, occasional in eastern N. Am. Adv. from Eu.—*Pennsylvania* : NORTHAMPTON; BUCKS; SUSQUEHANNA; TIOGA; VENANGO; CLEARFIELD; ERIE.

5. *Malva Alcea* L. EUROPEAN MALLOW. (Man. p. 619; I. F. f. 2419.) In waste places generally. Introd. from Eu.—*Pennsylvania* : CHESTER; POTTER.

3. SIDA L.

Leaf-blades merely toothed : flowers axillary.

1. *S. spinosa*.

Leaf-blades palmately lobed : flowers paniculate.

2. *S. hermaphrodita*.

* *Althaea rosea* Cav. (HOLLYHOCK), has escaped from gardens in Northampton, Bucks and Allegheny Counties.—*Pennsylvania* : BUCKS; NORTHAMPTON; ALLEGHENY.

1. *Sida spinosa* L. PRICKLY SIDA. (Man. p. 620; I. F. f. 2427.) In waste places, Me. to N. J., Mich., Kans., Fla. and Tex., and in tropical Am.—*Pennsylvania*: BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

2. *Sida hermaphrodita* (L.) Rusby. VIRGINIA MALLOW. (Man. p. 620; I. F. f. 2429.) Along rivers, in rocky places, southern Pa. to Ohio, Va. and Tenn.—*Pennsylvania*: YORK, on the Susquehanna.

4. ABUTILON Gaertn.

1. *Abutilon Abutilon* (L.) Rusby. VELVET LEAF. INDIAN MALLOW. (Man. p. 621; I. F. f. 2430.) In waste places, eastern U. S., Nat. or adv. from southern Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

5. KOSTELETZKYA Presl.

1. *Kosteletzkya Virginica* (L.) A. Gray. VIRGINIA KOSTELETZKYA. (Man. p. 622; I. F. f. 2433.) In salt or brackish marshes, N. J. to Fla. and La.—*Pennsylvania*: PHILADELPHIA, Navy Yard.

6. HIBISCUS L.

Herbs.

Perennial plants: leaf-blades toothed or hastate.

Leaf-blades white-pubescent beneath: seeds glabrous or nearly so.

1. *H. Moscheutos*.

Leaf-blades glabrous: seeds pubescent.

2. *H. militaris*.

Annual plants: leaf-blades pedately lobed.

3. *H. Trionum*.

Shrub or tree.

4. *H. Syriacus*.

1. *Hibiscus Moscheutos* L. SWAMP ROSE-MALLOW. MALLOW ROSE. (Man. p. 622; I. F. f. 2434.) In brackish marshes, Mass. to Fla. and La., and on lake shores and in saline situations locally in the interior to W. Ont.—*Pennsylvania*: BUCKS, Bristol; PHILADELPHIA; DELAWARE; LANCASTER; DAUPHIN; ERIE.

2. *Hibiscus militaris* Cav. HALBERD-LEAVED ROSE-MALLOW. (Man. p. 623; I. F. f. 2436.) Along rivers, southern Pa. to Fla., Minn., Nev. and La.—*Pennsylvania*: LANCASTER, Safe Harbor; PERRY.

3. *Hibiscus Trionum* L. FLOWER-OF-AN-HOUR. (Man. p. 623; I. F. f. 2437.) In waste places, N. S. to Fla., S. Dak. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; ALLEGHENY.

4. *Hibiscus Syriacus* L. SHRUBBY ALTHAEA. ROSE-OF-SHARON. (Man. p. 623; I. F. f. 2438.) On woodsides and thickets, N. J. to Ga. Introd. from W. Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; DELAWARE; CHESTER; LANCASTER; DAUPHIN.

Order 19. PARIETALES.

A. Calyx of distinct sepals.

a. Seeds with little or no endosperm.

Leaves not stipulate ; blades punctate : stamens several or many in groups.

Fam. 1. HYPERICACEAE.

Leaves stipulate ; blades not punctate : stamens as many as the petals or twice as many, not in groups.

Fam. 2. ELATINACEAE.

b. Seeds with copious endosperm.

Flowers regular, except for the 2 small outer sepals : androecium of many stamens, orthotropous.

Fam. 3. CISTACEAE.

Flowers irregular : androecium of 5 stamens : ovules anatropous.

Fam. 4. VIOLACEAE.

B. Calyx of partially united sepals.

Fam. 5. PASSIFLORACEAE.

FAMILY 1. HYPERICACEAE Lindl. ST. JOHN'S-WORT FAMILY.

Sepals 4, the pairs unequal : petals 4.

1. ASCYRUM.

Sepals 5 : petals 5.

Corolla yellow.

Leaves with flat more or less spreading blades.

2. HYPERICUM.

Leaves represented by small erect or appressed scales.

3. SAROTHTHA.

Corolla pink or greenish purple.

4. TRIADENUM.

1. ASCYRUM L.

Styles 3 or 4 : inner sepals slightly smaller than the outer : leaf-blades clasping.

1. *A. stans*.

Styles 2 : inner sepals much smaller than the outer : leaf-blades sessile.

2. *A. hypericoides*.

1. *Ascyrum stans* Michx. ST. PETER'S WORT. (Man. p. 625 ; I. F. f. 2442.) In dry sandy soil, I. I. to eastern Pa., Fla., Tenn. and Tex.—*Pennsylvania* : BUCKS ; BRISTOL.

2. *Ascyrum hypericoides* L. ST. ANDREW'S CROSS. (Man. p. 625 ; I. F. f. 2343.) In dry sandy soil, Mass. to Fla., Ill., Kans. and Tex.—*Pennsylvania* : BUCKS, Penn Valley ; DELAWARE ; CHESTER ; LANCASTER.

2. HYPERICUM L.

Styles 5 : capsules 5-celled.

Capsules 20-25 mm. long.

Capsules 6-12 mm. long.

Styles 3 or rarely 4.

Shrubs.

Herbs.

Stamens numerous, 15-40.

Capsules 1-celled or incompletely 3-4-celled.

Capsules incompletely 3-4-celled by the projecting placentae.

1. *H. Ascyron*.

2. *H. Kalmianum*.

3. *H. prolificum*.

4. *H. adpressum*.

Capsules 1-celled, with parietal placentae.

Styles united into a beak, distinct above : inflorescence leafy-bracted.

5. *H. ellipticum*.

Styles distinct : inflorescence nearly naked.

6. *H. virgatum*.

Capsules completely 3-celled.

Corolla over 15 mm. broad.

7. *H. perforatum*.

Corolla less than 15 mm. broad.

8. *H. maculatum*.

Stamens few, 5-12.

a. Inflorescence leafy-bracted.

9. *H. boreale*.

b. Inflorescence minutely bracted.

Leaf-blades ovate, oval, oblong or lanceolate, 5-7-nerved.

Capsules 2-5 mm. long: leaf-blades ovate, oval or oblong.

Sepals narrowly oblong, obtuse or acutish: leaf-blades obtuse.

10. *H. mutilum*.

Sepals lanceolate, long-acuminate: leaf-blades acute.

11. *H. gymnanthum*.

Capsules 8-10 mm. long: leaf-blades lanceolate.

12. *H. majus*.

Leaf-blades linear, 3-nerved.

13. *H. Canadense*.

1. *Hypericum Ascyron* L. GREAT OR GIANT ST. JOHN'S-WORT. (Man. p. 626; I. F. f. 2444.) Banks of streams, Quebec and Vt. to Man., Conn., N. J., Ill. and Kans. Also in Eu. and Asia.—*Pennsylvania*: PIKE; SUSQUEHANNA; LYCOMING; NORTHAMPTON; BUCKS; LANCASTER; DAUPHIN; ALLEGHENY; MERCER; LAWRENCE.

2. *Hypericum Kalmianum* L. KALM'S ST. JOHN'S-WORT. (Man. p. 626; I. F. f. 2445.) Ont. and western N. Y. to Ill., Wis. and Mich.—*Pennsylvania*: Reported from the northern counties, where it shall occur, but no specimens extant.

3. *Hypericum prolificum* L. SHRUBBY ST. JOHN'S-WORT. (Man. p. 626; I. F. f. 2446.) Sandy or rocky soil, N. Y. to Ky. and Ga.—*Pennsylvania*: PHILADELPHIA; LANCASTER, on Susquehanna; YORK; PERRY; LYCOMING; BLAIR; CLARION; HUNTINGTON; FULTON; SOMERSET; ALLEGHENY.

4. *Hypericum adpressum* Bart. CREEPING ST. JOHN'S-WORT. (Man. p. 626; I. F. f. 2449.) In low grounds, Mass. to Ga., La., Mo. and Ark.—*Pennsylvania*: BUCKS; BRISTOL; DELAWARE.

5. *Hypericum ellipticum* Hook. ELLIPTIC-LEAVED OR PALE ST. JOHN'S-WORT. (Man. p. 627; I. F. f. 2452.) In swamps and along streams, N. S. to Man., Conn., N. J., Pa. and Minn.—*Pennsylvania*: PIKE; MONROE; SCHUYLKILL; NORTHAMPTON; BUCKS; MONTGOMERY; LANCASTER; YORK; PERRY; CAMBRIA; CLARION; ALLEGHENY; SOMERSET; FAYETTE.

6. *Hypericum virgatum* Lam. VIRGATE ST. JOHN'S-WORT. (Man. p. 627; I. F. f. 2453.) In low grounds, Pa. to Del., Ill. and Fl.—*Pennsylvania*: BUCKS; BRISTOL.

7. *Hypericum perforatum* L. COMMON ST. JOHN'S-WORT. (Man. p. 627; I. F. f. 2454.) In fields and waste places, eastern N. Am. Nat. from Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; LUZERNE; ERIE; ALLEGHENY.

8. *Hypericum maculatum* Walt. SPOTTED ST. JOHN'S-WORT. (Man. p. 627; I. F. f. 2455.) In moist soil, Me. and Ont. to Minn., Fla., and Tex.—*Pennsylvania*: MONROE; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; LUZERNE; BLAIR; ERIE; ALLEGHENY.

9. *Hypericum boreale* (Britton) Bicknell. NORTHERN ST. JOHN'S-WORT. (Man. p. 628; I. F. f. 2457.) Wet soil, Newf. to Vt., N. J., and Pa.—*Pennsylvania*: LUZERNE, Lily Lake.

10. *Hypericum mutilum* L. DWARF ST. JOHN'S-WORT. (Man. p. 628; I. F. f. 2458.) In low grounds, N. S. to Man., Fla., Kans., and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

11. *Hypericum gymnanthum* Engelm. CLASPING-LEAVED ST. JOHN'S-WORT. (Man. p. 628; I. F. f. 2459.) In low grounds, N. J. and Del. to Minn., La. and Tex.—*Pennsylvania*: BUCKS, Bristol; DELAWARE, Tinicum.

12. *Hypericum majus* (A. Gray) Britton. LARGER CANADIAN ST. JOHN'S-WORT. (Man. p. 628; I. F. f. 2460.) In moist soil, Me. to Mich., N. J., and Neb.—*Pennsylvania*: ERIE, Presque Isle.

13. *Hypericum Canadense* L. CANADIAN ST. JOHN'S-WORT. (Man. p. 628; I. F. f. 2461.) In wet, sandy soil, Newf. to Man., Ga., Ky. and Wis.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE, Tinicum; CHESTER; LANCASTER; YORK; SCHUYLKILL; HUNTINGDON; ERIE, Presque Isle; FAYETTE.

3. SAROTHTA L.

1. *Sarothra gentianoides* L. ORANGE-GRASS. PINE-WEED. (Man. p. 628; I. F. f. 2463.) In sandy soil, Me. to Fla., Ont., Minn., Mo. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; YORK; SCHUYLKILL; BEDFORD; HUNTINGDON; ALLEGHENY.

4. TRIADENUM Raf.

Leaf-blades sessile and partly clasping: flower-clusters peduncled.

1. *T. Virginicum*.

Leaf-blades petioled: flower-clusters sessile or nearly so. 2. *T. petiolatum*.

1. *Triadenum Virginicum* (L.) Raf. MARSH ST. JOHN'S-WORT. (Man. p. 629; I. F. f. 2464.) In swamps, Lab. to Fla., Man., Neb. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; YORK; SCHUYLKILL; LUZERNE; FRANKLIN; CLARION; CRAWFORD; ALLEGHENY.

2. *Triadenum petiolatum* (Walt.) Britton. LARGER MARSH ST. JOHN'S-WORT. (Man. p. 629; I. F. f. 2465.) In swamps, N. J. and Md. to Fla., Ark. and La.—*Pennsylvania*: PHILADELPHIA (Bartram's Garden); CRAWFORD; ERIE.

FAMILY 2. ELATINACEAE Lindl. WATER-WORT FAMILY.

1. ELATINE L.

1. *Elatine Americana* (Pursh) Arn. WATER-WORT. MUD-PURLANE. (Man. p. 629; I. F. f. 2466.) Margins of ponds and slow streams, Me. and Ont. to Va., Mo. and Tex.—*Pennsylvania*: PHILADELPHIA; DELAWARE, Tinicum.

FAMILY 3. CISTACEAE Lindl. ROCK-ROSE FAMILY.

Corolla yellow: petals 5, fugacious or wanting.

1. HELIANTHEMUM.

Corolla not yellow: petals 3, persistent.

2. LECHEA.

1. **HELIANTHEMUM** Pers.

Petaliferous flowers 5-12, in terminal clusters: capsules of the petaliferous flowers 3-4 mm. long, little if at all overtopped by the later axillary branches: capsules of the apetalous flowers about 1 mm. in diameter.

1. *H. majus*.

Petaliferous flowers solitary or rarely 2: capsules of the petaliferous flowers 6-8 mm. long, much overtopped by the later axillary branches: capsules of the apetalous flowers nearly 4 mm. in diameter.

2. *H. Canadense*.

1. **Helianthemum majus** (L.) B.S.P. HOARY FROSTWEED. (Man. p. 630; I. F. f. 2470.) In dry soil, N. S. to S. Dak., Neb., N. C. and Tex.—*Pennsylvania*: BUCKS; MONTGOMERY; HUNTINGDON.

2. **Helianthemum Canadense** (L.) Michx. FROST-WORT. (Man. p. 631; I. F. f. 2471.) In dry rocky or sandy soil, Me. to Ont., Wis., N. C. and Ky.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CRAWFORD; DELAWARE; LANCASTER; CHESTER; ALLEGHENY; ERIE.

2. **LECHEA** L.

Leaves of the basal shoots with oblong or ovate blades not over thrice as long as broad.

Outer sepals surpassing the inner.

1. *L. minor*.

Outer sepals shorter than the inner or about equalling them.

Capsules oblong: pedicels 2-4 mm. long.

2. *L. racemulosa*.

Capsules globular: pedicels about 1 mm. long.

Stem or branches erect, villous.

3. *L. villosa*.

Stem or branches ascending or spreading, canescent.

4. *L. maritima*.

Leaves of the basal shoots with linear or lanceolate blades over thrice as long as broad.

Capsules obovoid, 1 mm. thick: panicle with ascending or spreading branches: flowers short-pedicelled.

5. *L. Leggettii*.

Capsules globular, 2 mm. thick: panicle with erect branches: flowers slender-pedicelled.

6. *L. intermedia*.

1. **Lechea minor** L. THYME-LEAVED PIN-WEED. (Man. p. 632; I. F. f. 2475.) In dry open grounds, eastern Mass. to Mich., Fla. and La.—*Pennsylvania*: BUCKS, Bristol.

2. **Lechea racemulosa** Michx. OBLONG-FRUITED PIN-WEED. (Man. p. 632; I. F. f. 2476.) In dry sandy and rocky soil, eastern Mass. (?), N. Y. to Ind., and Fla.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; HUNTINGDON; FRANKLIN; WESTMORELAND; ALLEGHENY.

3. **Lechea villosa** Ell. LARGE OR HAIRY PIN-WEED. (Man. p. 632; I. F. f. 2477.) In dry soil, Mass. and Vt. to southern Ont., Neb., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; MONROE; LANCASTER; ERIE, Presque Isle.

4. **Lechea maritima** Leggett. BEACH PIN-WEED. (Man. p. 632; I. F. f. 2478.) Sands of the seashore and in sandy pine barrens, Me. to Ga. Also in the White Mts., N. H.—*Pennsylvania*: BUCKS, Bristol; MONTGOMERY; LUZERNE; COLUMBIA; LANCASTER; DELAWARE.

5. **Lechea Leggettii** Britt. & Holl. LEGGETT'S PIN-WEED. (Man. p. 633; I. F. f. 2480.) In open places, Mass. to Ind. N. C. and Ala.—*Pennsylvania*: MONROE.

6. *Lechea intermedia* Leggett. 'LARGE-PODDER PIN-WEED. (Man. p. 633; I. F. f. 2481.) In dry open places, N. B. and Ont. to Pa. and N. J.—*Pennsylvania*: MONROE; NORTHAMPTON; LEHIGH; HUNTINGDON.

FAMILY 4. **VIOLACEAE** DC. VIOLET FAMILY.

Sepals more or less auricled at the base.
 Sepals not auricled at the base.

1. *VIOLA*.
 2. *CUBELIUM*.

1. **VIOLA** L.

A. Plants aculescent: flowers terminating basal scapes.
 Plants not stoloniferous.

Leaf-blades mostly lobed or parted.
 Petals not bearded: cleistogamous flowers wanting.

Petals bearded: cleistogamous flowers present.

Plants with markedly pubescent foliage.

Plants glabrous or essentially so.

Leaf-blades merely toothed, sometimes incised at the base, not lobed.

Leaf-blades ovate, orbicular or reniform, merely toothed.

Peduncles of the cleistogamous flowers horizontal or decumbent: species of woodlands.

Leaf-blades membranous, cordate-ovate, attenuate at the apex.

Corolla deep blue: cleistogamous flowers on deflexed peduncles.

4. *V. obliqua*.

Corolla pale blue: cleistogamous flowers on horizontal peduncles.

5. *V. sororia*.

Leaf-blades thick, reniform to ovate, obtuse or merely acute at the apex.

Petals dark violet purple, narrow.

Cleistogamous flowers few, on deflexed peduncles: leaf-blades mostly less than 10 cm. broad.

6. *V. papilionacea*.

Cleistogamous flowers numerous, on horizontal peduncles: leaf-blades mostly over 10 cm. broad.

7. *V. domestica*.

Petals reddish purple, suborbicular.

8. *V. villosa*.

Peduncles of the cleistogamous flowers erect; species of meadows or swamps.

9. *V. cucullata*.

Leaf-blades lanceolate to ovate-lanceolate or ovate, often incised at the base.

Leaves overtopping the scapes.

Petals scarcely or not at all notched.

Leaf-blades sagittate-lanceolate.

10. *V. sagittata*.

Leaf-blades oblong-triangular.

11. *V. dentata*.

Petals usually notched.

12. *V. emarginata*.

Leaves shorter than the scapes.

13. *V. fimbriatula*.

Plants stoloniferous.

Corolla deep violet purple or sometimes white: naturalized species.

14. *V. odorata*.

Corolla pale purple, violet-blue, yellow or white: native species.

Corolla yellow.

15. *V. rotundifolia*.

Corolla violet-blue or white.

Corolla violet-blue.

16. *V. Selkirkii*.

Corolla white.

Cleistogamous flowers on deflexed stalks : leaf-blades broadly ovate to orbicular.

Leaf-blades ovate-cordate, glabrate.

Upper and lateral petals twice as long as broad : petioles spotless.

17. *V. blanda*.

Upper and lateral petals thrice as long as broad : petioles spotted.

18. *V. LeConteana*.

Leaf-blades reniform, copiously pubescent. 19. *V. renifolia*.

Cleistogamous flowers on erect stalks : leaf-blades linear to oblong-oval or narrowly ovate.

Leaf-blades ovate, oval or oblong, more or less pubescent.

20. *V. primulaefolia*.

Leaf-blades linear or linear-lanceolate, glabrous.

21. *V. lanceolata*.

B. Plants caulescent : flowers axillary.

Corolla yellow.

Leaf-blades hastate.

22. *V. hastata*.

Leaf-blades broadly ovate to reniform.

Plant copiously pubescent : basal leaves early withering.

23. *V. pubescens*.

Plant glabrate or sparingly pubescent : basal leaves persistent.

24. *V. scabriuscula*.

Corolla purple, blue, white or cream-colored.

Stipules entire.

25. *V. Canadensis*.

Stipules incised or pinnatifid.

Plants perennial : stipules much smaller than the leaf-blades.

Petals cream-colored, the lower one purple-veined.

26. *V. striata*.

Petals blue or purple or rarely white.

Spur of the corolla shorter than the petals.

27. *V. Labradorica*.

Spur of the corolla longer than the petals.

28. *V. rostrata*.

Plants annual : stipules nearly as large as the leaf-blades.

Corolla mostly over 16 mm. wide : naturalized species.

29. *V. tricolor*.

Corolla mostly less than 16 mm. wide : native species.

30. *V. Rafinesquii*.

1. *Viola pedata* L. BIRD'S-FOOT VIOLET. (Man. p. 636 ; I. F. f. 2492.) Dry fields and hillsides, Me. and Ont. to Minn., Mo. and Fla.—*Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; HUNTINGDON.

2. *Viola palmata* L. EARLY BLUE VIOLET. (Man. p. 635 ; I. F. f. 2484.) In woodlands, Me. to Ont., Minn., Ga. and Ark.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; PHILADELPHIA ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; HUNTINGDON ; ALLEGHENY.

3. *Viola Brittoniana* Pollard. COAST VIOLET. (Man. p. 635 ; I. F. f. 2485.) Sandy soil near the coast, Mass. to N. C.—*Pennsylvania* : BUCKS ; PHILADELPHIA.

4. *Viola obliqua* Hill. THIN-LEAVED WOOD VIOLET. (Man. p. 636.) Rich soil in shade, N. Y. to Va.—*Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; LANCASTER ; FRANKLIN ; HUNTINGDON ; CAMBRIA ; SOMERSET ; ALLEGHENY.

5. *Viola sororia* Willd. (Man. p. 635; I. F. f. 2489.) Woodlands, Me. to Ont., Minn., Ga. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE

6. *Viola papilionacea* Pursh. (Man. p. 636; I. F. f. 2487.) MEADOW OR HOODED VIOLET. Woodlands, N. S. to Minn., Ga. and Kans.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN. Rather common.

7. *Viola domestica* Bickn. (Man. p. 636; I. F. f. 2487a.) Cult. soil about dwellings, N. Y. to Va.—*Pennsylvania*: NORTHAMPTON, BUCKS; DELAWARE, Tinicum; ALLEGHENY.

8. *Viola villosa* Walt. SOUTHERN WOOD VIOLET. (Man. p. 636; I. F. f. 2488.) Dry woods and hillsides, Pa. and N. J. to Ga. and La.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; LANCASTER; YORK; FRANKLIN; FULTON; ARMSTRONG.

9. *Viola cucullata* Ait. MARSH BLUE VIOLET. (Man. p. 637; I. F. f. 2487b.) Bogs and wet meadows, Me. and Ont. to Ga. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONROE, Pocono.

10. *Viola sagittata* Ait. ARROW-LEAVED VIOLET. (Man. p. 637; I. F. f. 2490.) Wet meadows and marshes, Me. to Mich., Ga. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; ARMSTRONG; ALLEGHENY.

11. *Viola dentata* Pursh. UPLAND VIOLET. (Man. p. 637.) Dry rich soil in hilly regions, Pa. to Va.—*Pennsylvania*: PIKE; BERKS; MONTGOMERY.

12. *Viola emarginata* (Nutt.) Le Conte. TRIANGLE-LEAVED VIOLET. (Man. p. 637; I. F. f. 2490a.) Fields and hillsides, N. Y. to Va.—*Pennsylvania*: BUCKS; MONTGOMERY; MONTOUR.

13. *Viola fimbriatula* J. E. Smith. OVATE-LEAVED VIOLET. (Man. p. 638; I. F. f. 2491.) Dry soil, N. S. to Mo. and La.—*Pennsylvania*: MONROE; PIKE; NORTHAMPTON; MONTGOMERY; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; CENTRE; FULTON; CAMBRIA; SOMERSET; ALLEGHENY.

14. *Viola odorata* L. ENGLISH OR SWEET VIOLET. (Man. p. 638; I. F. f. 2493.) In grass places, eastern N. Am. and on the Pacific coast. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON; LANCASTER.

15. *Viola rotundifolia* Michx. ROUND-LEAVED VIOLET. (Man. p. 638; I. F. f. 2494.) Woods and rocky hillsides, Lab. and Ont. to Minn., south in the mountains to N. C.—*Pennsylvania*: MONROE; BUCKS; MONTGOMERY; PHILADELPHIA; LANCASTER; SCHUYLKILL; SULLIVAN; BLAIR; CAMBRIA; SOMERSET; ERIE; DELAWARE.

16. *Viola Selkirkii* Pursh. SELKIRK'S VIOLET. (Man. p. 638; I. F. f. 2496.) Moist woods, N. S. to Mass., Pa. and Minn. Also in Eu. and Asia.—*Pennsylvania*: MONROE, west of Tobyhanna Mills; SOMERSET.

17. *Viola blanda* Willd. SWEET WHITE VIOLET. (Man. p. 638; I. F. f. 2497.) Swamps and wet meadows, Newf. to B. C. and N. C.—*Pennsylvania*: LACKAWANNA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; SCHUYLKILL; FRANKLIN; HUNTING-

DON; BLAIR; CENTRE; SULLIVAN; VENANGO; ALLEGHENY; ARMSTRONG; ERIE; SOMERSET.

18. *Viola LeConteana* G. Don. WOODLAND WHITE VIOLET. (Man. p. 638.) Wet hilly woods, N. Eng. to N. C. and Ill.—*Pennsylvania*: MONROE; BUCKS; DELAWARE; LANCASTER.

19. *Viola renifolia* A. Gray. KIDNEY-LEAVED VIOLET. (Man. p. 638; I. F. f. 2498.) Woods and thickets, N. S. to Pa. and Minn.—*Pennsylvania*: FULTON.

20. *Viola primulaefolia* L. PRIMROSE-LEAVED VIOLET. (Man. p. 639; I. F. f. 2499.) Moist or wet ground, N. B. to Fla. and La.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; MONTGOMERY; ALLEGHENY.

21. *Viola lanceolata* L. LANCE-LEAVED VIOLET. (Man. p. 639; I. F. f. 2500.) Wet meadows and along streams, N. S. to Minn., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; LANCASTER; DAUPHIN; HUNTINGDON; ALLEGHENY.

22. *Viola hastata* Michx. HALBERD-LEAVED YELLOW VIOLET. (Man. p. 639; I. F. f. 2502.) Woods, in hilly regions, Pa. and Ohio to Ga. and Ala.—*Pennsylvania*: BLAIR; CAMBRIA; SOMERSET; FAYETTE.

23. *Viola pubescens* Ait. HAIRY YELLOW VIOLET. (Man. p. 649; I. F. f. 2503.) Dry woods, Quebec to S. Dak., Ga. and Iowa.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; YORK; HUNTINGDON; FRANKLIN; VENANGO; ALLEGHENY.

24. *Viola scabriuscula* (T. & G.) Schwein. SMOOTHISH YELLOW VIOLET. (Man. p. 639; I. F. f. 2504.) Moist woods and thickets, N. S. to Man., Neb. Ga. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; HUNTINGDON; DELAWARE; SULLIVAN; SOMERSET; ERIE; ALLEGHENY.

25. *Viola Canadensis* L. CANADA VIOLET. (Man. p. 639; I. F. f. 2505.) Woods, in hilly districts, Newf. and Saskatchewan to N. C., Neb., N. Mex. and Ariz.—*Pennsylvania*: BUCKS, Nockamixon Creek; MONROE; SULLIVAN; LANCASTER; ERIE; VENANGO; ARMSTRONG; FAYETTE; SOMERSET; ALLEGHENY.

26. *Viola striata* Ait. PALE OR STRIPED VIOLET. (Man. p. 639; I. F. f. 2506.) Moist woods and thickets, N. Eng. and Ont. to Minn., Ga. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; SOMERSET; ERIE; ALLEGHENY.

27. *Viola Labradorica* Schrank. AMERICAN DOG VIOLET. (Man. p. 639; I. F. f. 2507.) Moist soil, Lab. to Minn., N. C. and Ky.—*Pennsylvania*: MONROE; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; SOMERSET; ERIE; BLAIR; ALLEGHENY; ARMSTRONG; CENTRE; VENANGO.

28. *Viola rostrata* Pursh. LONG-SPURRED VIOLET. (Man. p. 640; I. F. f. 2510.) Rocky woods, Quebec to Mich., south in the mount ins

to Ga.—*Pennsylvania*: NORTHAMPTON; LEHIGH; BUCKS; LANCASTER; MONTGOMERY.

29. *Viola tricolor* L. PANSY. HEART'S-EASE. (Man. p. 640; I. F. f. 2511.) Waste places, sparingly escaped.—*Pennsylvania*: SUSQUEHANNA; NORTHAMPTON; PHILADELPHIA; DELAWARE, Tinicum.

30. *Viola Rafinesquii* Greene. FIELD PANSY. (Man. p. 640; I. F. f. 2512.) Hillsides, Me. to Ga., Mich. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; LUZERNE; LANCASTER; PERRY; FRANKLIN; HUNTINGDON.

2. CUBELIUM Raf.

1. *Cubelium concolor* (Forst.) Raf. GREEN VIOLET. (Man. p. 640; I. F. f. 2513.) Moist woods, Ont. to Mich., Ge. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; FRANKLIN; GREENE; ALLEGHENY.

FAMILY 5. **PASSIFLORACEAE** Dumort. PASSION-FLOWER FAMILY.

1. PASSIFLORA L.

1. *Passiflora lutea* L. YELLOW PASSION-FLOWER. (Man. p. 641; I. F. f. 2516.) In thickets, Pa. to Kans., Fla. and La.—*Pennsylvania*: LANCASTER, on Susquehanna; ALLEGHENY.

Order 20. OPUNTIALES.

FAMILY 1. **CACTACEAE** Lindl. CACTUS FAMILY.

1. OPUNTIA Mill.

1. *Opuntia Opuntia* (L.) Coult. EASTERN PRICKLY PEAR. (Man. p. 644; I. F. f. 2527.) In sandy soil, or on rocks, Mass. to Pa. and Fla.—*Pennsylvania*: LANCASTER, Peach Bottom; MONROE, Water Gap.

Order 21. THYMELEALES.

Ovule and seed pendulous: plants without scales. Fam. 1. THYMELEACEAE.

Ovule and seed erect: plants with scales. Fam. 2. ELAEAGNACEAE.

FAMILY 1. **THYMELEACEAE** Reichenb. MEZEREON FAMILY.

1. DIRCA L.

1. *Dirca palustris* L. LEATHER-WOOD. MOOSE-WOOD. (Man. p. 646; I. F. f. 2535.) In woods and thickets, N. B. to Minn., Va., Tenn., Mo. and Fla.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; BERKS; HUNTINGDON; SOMERSET; FAYETTE; CRAWFORD; ERIE.

FAMILY 2. **ELAEAGNACEAE** Lindl. OLEASTER FAMILY.

1. ELAEAGNUS L.

Free portion of the hypanthium campanulate.

1. *E. angustifolia*.

Free portion of the hypanthium funnellform.

2. *E. argentea*.

1. *Elaeagnus angustifolia* L.—Locally naturalized in N. Am. Nat. of Eu. and Asia.—*Pennsylvania*: CHESTER.

2. *Elaeagnus argentea* Pursh. BUFFALO OR RABBIT-BERRY. (Man. p. 647; I. F. f. 2538.) Manitoba and Minn. to Saskatchewan, Kans. and Nev. Adv. eastward.—*Pennsylvania*: DELAWARE.

Order 22. MYRTALES.

Style present, simple or compound: stigma terminal.

Anthers opening by pores.

Fam. 1. MELASTOMACEAE.

Anthers opening by longitudinal valves.

Hypanthium merely enclosing the ovary.

Fam. 2. LYTHRACEAE.

Hypanthium adnate to the ovary or mainly so.

Fam. 3. ONAGRACEAE.

Style wanting: stigmas sessile.

Fam. 4. HALORAGIDACEAE.

FAMILY 1. MELASTOMACEAE R. Br. MEADOW BEAUTY FAMILY.

1. RHEXIA L.

Stems terete: leaf-blades relatively narrow, mainly short-petioled.

1. *R. Mariana*.

Stems angled: leaf-blades relatively broad, mainly sessile.

2. *R. Virginica*.

1. *Rhexia Mariana* L. MARYLAND MEADOW BEAUTY. (Man. p. 651; I. F. f. 2551.) In swamps or low grounds, L. I. to Fla., Ky., Mo., and Tex.—*Pennsylvania*: BUCKS, Bristol.

2. *Rhexia Virginica* L. MEADOW-BEAUTY. DEER-GRASS. (Man. p. 651; I. F. f. 2552.) In sandy swamps, Me. to Fla., Ill., Mo. and La.—*Pennsylvania*: MONROE, Pocomo; BUCKS; DELAWARE; CHESTER; LYCOMING; CARBON; LANCASTER; YORK; PERRY; FRANKLIN.

FAMILY 2. LYTHRACEAE Lindl. LOOSESTRIFE FAMILY.

Flowers regular: hypanthium not oblique.

Hypanthium hemispheric, turbinate or campanulate.

Herbs: flowers mostly solitary in the axils: capsules septicidal.

1. ROTALA.

Shrubs: flowers in axillary cymes: capsules loculicidal.

2. DECODON.

Hypanthium cylindric.

3. LYTHRUM.

Flowers irregular: hypanthium oblique.

4. PARSONSIA.

1. ROTALA L.

1. *Rotala ramosior* (L.) Koehne. ROTALA. (Man. p. 649; I. F. f. 2543.) In swamps, Mass. to Fla., Ill., Neb., Tex. and Mex. Also in Calif., Ore., S. Am. and the W. I.—*Pennsylvania*: DELAWARE; CHESTER; LANCASTER, on Susquehanna; FRANKLIN, Chambersburg.

2. DECODON J. F. Gmel.

1. *Decodon verticillatus* (L.) Ell. SWAMP WILLOW-HERB OR LOOSESTRIFE. (Man. p. 649; I. F. f. 2544.) In swamps, Me. to Fla., Ont., Minn., Ky. and La.—*Pennsylvania*: NORTHAMPTON; PIKE; CARBON; BERKS; LUZERNE; DELAWARE; DAUPHIN; FRANKLIN; CRAWFORD; ERIE.

3. **LYTHRUM** L.

Flowers solitary in the axils: stamens not more than the petals.

Annual: flowers not dimorphous: stamens included. 1. *L. hyssopifolium*.

Perennial: flowers dimorphous: stamens of short-styled flowers exerted.

2. *L. alatum*.

Flowers in panicked terminal spikes: stamens twice as many as the petals.

3. *L. Salicaria*.

1. **Lythrum hyssopifolium** L. HYSSOP LOOSESTRIFE. (Man. p. 649; I. F. f. 2545.) Borders of salt marshes, Me. to Pa. and N. J. Also in Calif. and S. Am. Nat. from Eu.—*Pennsylvania*: BUCKS, Plumsteadville.

2. **Lythrum alatum** Pursh. WING-ANGLED LOOSESTRIFE. (Man. p. 650; I. F. f. 2546.) In low grounds, southern Ont. to Mass., Ky., S. Dak. and Kans.—*Pennsylvania*: DELAWARE, Hay Island; ALLEGHENY.

3. **Lythrum Salicaria** L. SPIKED OR PURPLE LOOSESTRIFE. (Man. p. 650; I. F. f. 2549.) In swamps and wet meadows, Cape Breton Island to Ont. and Del. Said to be nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; ALLEGHENY.

4. **PARSONSIA** P. Br.

1. **Parsonsia petiolata** (L.) Rusby. BLUE WAX-WEED. CLAMMY CUPHEA. (Man. p. 650; I. F. f. 2550.) In dry soil, R. I. to Ill., Kans., Ga. and La. Introduced into southern Ont.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; LEBANON; DAUPHIN; FRANKLIN; HUNTINGDON; ALLEGHENY.

FAMILY 3. **ONAGRACEAE** Dumort. EVENING-PRIMROSE FAMILY.

Floral whorls of 4 parts or more.

Fruit a many-seeded capsule, opening by valves or a pore.

Hypanthium not prolonged beyond the ovary.

Seeds naked.

Leaves opposite: plants with creeping or floating stems.

1. ISNARDIA.

Leaves alternate: plants with erect or ascending stems.

2. LUDWIGIA.

Seeds with tufts of hairs.

3. CHAMAENERION.

Hypanthium prolonged beyond the ovary.

Seeds furnished with tufts of hairs.

4. EPILOBIUM.

Seeds naked, sometimes tuberculate.

Stamens equal in length.

Ovules and seeds horizontal, angled.

5. ONAGRA.

Ovules and seeds ascending, not angled.

6. OENOTHERA.

Stamens unequal in length, the alternate ones longer.

7. KNEIFFIA.

Fruit indehiscent, nut-like.

8. GAURA.

Floral whorls of 2 parts.

9. CIRCAEA.

1. **ISNARDIA** L.

1. **Isnardia palustris** L. MARSH PURSLANE. (Man. p. 652; I. F. f. 2555.) In muddy ditches and swamps, N. S. to Man., Ore., Fla., Calif. and Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONROE; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

2. LUDWIGIA L.

Corolla wanting or obsolete : flowers sessile : capsule valvate.

1. *L. sphaerocarpa*.

Corolla conspicuous : flowers peduncled : capsule opening by a terminal pore.

2. *L. allernifolia*.

1. *Ludwigia sphaerocarpa* Ell. GLOBE-FRUITED LUDWIGIA. (Man. p. 653 ; I. F. f. 2557.) In swamps, eastern Mass. and southern N. Y. to Fla., west to La.—*Pennsylvania* : BUCKS, Bristol.

2. *Ludwigia laternifolia* L. SEED-BOX. RATTLE-BOX. (Man. p. 654 ; I. F. f. 2563.) In swamps, N. H. to northern N. Y., Ont. (?), Mich., Fla., Kans. and Tex.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; COLUMBIA ; HUNTINGDON ; ALLEGHENY.

3. CHAMAENERION Adans.

1. *Chamaenerion angustifolium* (L.) Scop. GREAT OR SPIKED WILLOW-HERB. FIRE-WEED. (Man. p. 655 ; I. F. f. 2566.) In dry soil, Lab. to Alaska, N. C., Kans., Ariz. and Calif. Also in Eu. and Asia.—*Pennsylvania* : LACKAWANNA ; MONROE ; SCHUYLKILL ; LUZERNE ; CAMBRIA ; NORTHAMPTON ; BUCKS ; PHILADELPHIA ; CHESTER ; LANCASTER ; CENTRE ; ALLEGHENY.

4. EPILOBIUM L.

Leaf-blades linear to lanceolate, essentially entire.

Leaf-blades petioled : plants canescent.

1. *E. lineare*.

Leaf-blades sessile : plants glandular-pubescent.

2. *E. strictum*.

Leaf-blades ovate to lanceolate, serrate.

Flowers drooping : seeds obconic, beakless : coma reddish.

3. *E. coloratum*.

Flowers erect : seeds ellipsoid, short-beaked : coma white.

4. *E. adenocaulon*.

1. *Epilobium lineare* Muhl. LINEAR-LEAVED WILLOW-HERB. (Man. p. 656 ; I. F. f. 2572.) In swamps, N. B. to B. C., Del., the Ind. Terr. and Wyo.—*Pennsylvania* : LACKAWANNA ; MONROE ; SCHUYLKILL ; LANCASTER ; BUCKS.

2. *Epilobium strictum* Muhl. DOWNY OR SOFT WILLOW-HERB. (Man. p. 656 ; I. F. f. 2573.) Bogs, Me. to Ont., Minn., Va. and Ill.—*Pennsylvania* : LANCASTER ; DELAWARE ; ELK ; CRAWFORD ; ERIE.

3. *Epilobium coloratum* Muhl. PURPLE-LEAVED WILLOW-HERB. (Man. p. 656 ; I. F. f. 2575.) In low grounds, Me. to Ont., Wis., S. Dak., S. C. and Kans.—*Pennsylvania* : MONROE ; LACKAWANNA ; NORTHAMPTON ; BUCKS ; PHILADELPHIA ; DELAWARE ; CHESTER ; LANCASTER ; DAUPHIN ; FRANKLIN ; HUNTINGDON ; ERIE ; ALLEGHENY.

4. *Epilobium adenocaulon* Haussk. NORTHERN WILLOW-HERB. (Man. p. 656 ; I. F. f. 2576.) In moist grounds, N. B. to Ore., south to Mass., Pa., Iowa, Utah and Calif.—*Pennsylvania* : MONROE ; SCHUYLKILL ; LUZERNE ; TIOGA ; DELAWARE, Tinicum.

5. **ONAGRA** Adans.

Capsules 2 cm. to almost 3 cm. long, abruptly narrowed at the apex: plants appressed-pubescent.

1. *O. biennis*.

Capsules 3 cm. long or longer, gradually narrowed at the apex: plants velvety-pubescent.

2. *O. Oakesiana*.

1. ***Onagra biennis*** (L.) Scop. COMMON EVENING-PRIMROSE. (Man. p. 657; I. F. f. 2579.) Usually in dry soil, Lab. to Fla., west to the Miss. Valley. Nat. in the Old World.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. ***Onagra Oakesiana*** (A. Gray) Britton. OAKES' EVENING-PRIMROSE. (Man. p. 657; I. F. f. 2580.) Shores of the St. Lawrence and along the Great Lakes to Mass., Pa. and Neb.—*Pennsylvania*: MONROE, Tannersville.

6. **OENOTHERA** L.

1. ***Oenothera laciniata*** Hill. SINUATE-LEAVED EVENING-PRIMROSE. (Man. p. 658; I. F. f. 2582.) In sandy dry soil, southern N. J. to Pa., Ill. and Neb., south to Fla., Tex. and Mex., extending in S. Am. Nat. in Vt.—*Pennsylvania*: BUCKS; PHILADELPHIA.

7. **KNEIFFIA** Spach.

Capsules club-shaped.

Capsules pubescent.

Pedicel-like base longer than the capsule-body whose thick wings are pubescent.

1. *K. longipedicellata*.

Pedicel-like base shorter than the capsule-body whose thin wings are glabrous.

2. *K. linearis*.

Capsules glabrous or nearly so.

3. *K. pumila*.

Capsules oblong or nearly so.

4. *K. fruticosa*.

1. ***Kneiffia longipedicellata*** Small. LONG-STEMMED SUNDROPS. (Man. p. 659; I. F. f. 2589.) In fields and thickets, N. Y. to W. Va. and Fla.—*Pennsylvania*: BUCKS, Tullytown; DELAWARE, Tinicum.

2. ***Kneiffia linearis*** (Michx.) Spach. NARROW-LEAVED SUNDROPS. (Man. p. 660; I. F. f. 2590.) In meadows, Conn. to Tenn. and Ga.—*Pennsylvania*: LANCASTER; MONTGOMERY.

3. ***Kneiffia pumila*** (L.) Spach. SMALL SUNDROPS. (Man. p. 660; I. F. f. 2591.) In dry soil, N. S. to Man., N. J., Ga. and Kans.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; LANCASTER; YORK; HUNTINGDON; BLAIR; ALLEGHENY.

4. ***Kneiffia fruticosa*** (L.) Raimann. COMMON SUNDROPS. (Man. p. 660; I. F. f. 2592.) In dry soil, N. S. to Ga., Minn. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; MONTGOMERY; FRANKLIN; CENTRE; CRAWFORD; SOMERSET.

4a. ***K. fruticosa pilosella*** (Raf.) Britton. (Man. p. 660.) On banks, N. Y. to Ill., south to Ga.—NORTHAMPTON; BUCKS; MONROE; LUZERNE; CLARION; ALLEGHENY.

8. GAURA L.

1. *Gaura biennis* L. BIENNIAL GAURA. (Man. p. 663; I. F. f. 2605.) In dry soil, Quebec and Ont. to Minn., Ga., Neb. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; WASHINGTON; ALLEGHENY.

9. CIRCAEA L.

Leaf-blades mainly of an ovate type: fruit 2-celled.

1. *C. Lutetiana*.

Leaf-blades mainly of a cordate type: fruit 1-celled.

2. *C. alpina*.

1. *Circaea Lutetiana* L. ENCHANTER'S NIGHTSHADE. (Man. p. 664; I. F. f. 2610.) In woods, N. S. to W. Ont., S. Dak., Ga., Neb. and Kans. Also in Eu. and Asia.—*Pennsylvania*: PIKE; LACKAWANNA; TIOGA; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; COLUMBIA; ERIE; ALLEGHENY.

2. *Circaea alpina* L. SMALLER ENCHANTER'S NIGHTSHADE. (Man. p. 664; I. F. f. 2611.) In cold, moist woods, Lab. to Alaska, Ga., Ind., Mich. and S. Dak. Also in Eu. and Asia.—*Pennsylvania*: PIKE; LACKAWANNA; TIOGA; SULLIVAN; MONROE; NORTHAMPTON; YORK; HUNTINGDON; BLAIR; CAMBRIA.

FAM. 4. HALORAGIDACEAE Kl. & Garcke. WATER MILFOIL FAMILY.

Flowers perfect: floral whorls of 3 parts: fruit mostly 3-celled.

1. PROSERPINACA.

Flowers monoecious or polygamous: floral whorls of 4 or 8 parts: fruit of 4 carpels.

2. MYRIOPHYLLUM.

1. PROSERPINACA L.

Fruit sharp-angled: emerged leaves with toothed blades.

1. *P. palustris*

Fruit blunt-angled: emerged leaves with pectinate-pinnatifid blades.

2. *P. pectinata*.

1. *Proserpinaca palustris* L. MERMAID-WEED. (Man. p. 665; I. F. f. 2615.) In swamps, N. B. to Lake Huron, Fla., Iowa and C. Am. Also in Cuba.—*Pennsylvania*: NORTHAMPTON; BUCKS; DAUPHIN; LUZERNE, Lily Lake; HUNTINGDON; ERIE.

2. *Proserpinaca pectinata* Lam. CUT-LEAVED MERMAID-WEED. (Man. p. 665; I. F. f. 2616.) In sandy swamps near the coast, eastern Mass. to Fla. and La.—*Pennsylvania*: LANCASTER.

2. MYRIOPHYLLUM L.

Fruit of smooth keelless carpels.

Flowers only on emerged stems.

Bracts longer than the flowers, pinnatifid.

1. *M. verticillatum*.

Bracts shorter than the flowers, not pinnatifid, sometimes obsolete.

Submerged stems leafy: fruit 2 mm. long.

2. *M. spicatum*.

Submerged stems leafless or nearly so: fruit 1 mm. long.

3. *M. tenellum*.

Flowers on both emerged and submerged stems.

4. *M. humile*.

Fruit of 2-keeled carpels.

5. *M. heterophyllum*.

1. *Myriophyllum verticillatum* L. WHORLED WATER-MILFOIL. (Man. p. 666; I. F. f. 2618.) Quebec and Ont. to Fla., Minn. and Calif. Also in Eu. and Asia.—*Pennsylvania*: BUCKS.

2. *Myriophyllum spicatum* L. SPIKED WATER-MILFOIL. (Man. p. 666; I. F. f. 2617.) In deep water, Newf. to the N. W. Terr., Fla., Iowa, Kans. and Calif. Also in Eu. and Asia.—*Pennsylvania*: ERIE, Presque Isle.

3. *Myriophyllum tenellum* Bigel. SLENDER WATER-MILFOIL. (Man. p. 666; I. F. f. 2620.) Sandy bottoms of ponds and streams, New. to N. J., Pa. and Mich.—*Pennsylvania*: PIKE, Twelve Mile Pond.

4. *Myriophyllum humile* (Raf.) Morong. LOW WATER-MILFOIL. (Man. p. 666; I. F. f. 2621.) In ponds, Me., R. I. to Md. and Ill.—*Pennsylvania*: MONROE, Long Pond.

5. *Myriophyllum heterophyllum* Michx. VARIOUS-LEAVED WATER-MILFOIL. (Man. p. 666; I. F. f. 2622.) In ponds, Ont. and N. Y. to Fla., S. Dak., Tex. and Mex.—*Pennsylvania*: BUCKS.

Order 23. UMBELLALES.

Androecium of 5 stamens: styles distinct, rarely partially united.

Fruit fleshy or pulpy, the carpels permanently united.

Fam. 1. ARALIACEAE.

Fruit dry, splitting in two carpels at maturity.

Fam. 2. UMBELLIFERAE.

Androecium of 4 stamens: styles united.

Fam. 3. CORNACEAE.

FAMILY I. ARALIACEAE Vent. GINSENG FAMILY.

Styles 5: leaves or bracts alternate; blades not digitately compound. 1. ARALIA.

Styles 2-3: leaves or bracts whorled; blades digitately compound. 2. PANAX.

1. ARALIA L.

Umbels numerous, in terminal or axillary racemes or panicles.

Shrub or small tree, with prickly-armed stems: leaflets leathery.

1. *A. spinosa*.

Large unarmed herb: leaflets membranous.

2. *A. racemosa*.

Umbels few, in terminal corymbs or few-rayed umbels.

Plants with elongated rootstocks, a peduncle or a leaf arising at intervals from the rootstock.

3. *A. nudicaulis*.

Plants with leafy branches arising from the rootstock.

4. *A. hispida*.

1. *Aralia spinosa* L. HERCULES' CLUB. ANGELICA TREE. (Man. p. 668; I. F. f. 2626.) In low grounds and along streams, Conn. to Fla., Ind., Mo. and Tex.—*Pennsylvania*: BLAIR; CAMBRIA; CLEARFIELD; WESTMORELAND; DELAWARE; CHESTER; LANCASTER; BUCKS; ALLEGHENY.

2. *Aralia racemosa* L. AMERICAN SPIKENARD. (Man. p. 668; I. F. f. 2627.) In rich woods, N. B. to Ga., S. Dak. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; HUNTINGDON; BEDFORD; TIOGA; ALLEGHENY.

3. *Aralia nudicaulis* L. WILD OR VIRGINIAN SARSAPRILLA. (Man. p. 668; I. F. f. 2628.) In woods, Newf. to Man., N. C., Neb. and Mo.—

Pennsylvannia : NORTHAMPTON ; BUCKS ; DELAWARE ; MONROE ; LANCASTER ; ALLEGHENY.

4. *Aralia hispida* Vent. BRISTLY SARSAPARILLA. WILD ELDER. (Man. p. 668 ; I. F. f. 2629.) In rocky or sandy woods and clearings, Newf. to N. C., Ont. Minn. and Ind.—*Pennsylvania* : MONROE ; WAYNE ; DAUPHIN ; CHESTER ; HUNTINGDON ; LANCASTER ; BLAIR ; CAMBRIA ; LACKAWANNA.

2. PANAX L.

Rootstock fusiform : leaflets stalked, acuminate : berries bright crimson.

1. *P. quinquefolium*.

Rootstocks globular : leaflets sessile, obtuse : berries yellow.

2. *P. trifolium*.

1. *Panax quinquefolium* L. GINSENG. (Man. p. 668 ; I. F. f. 2630.) In rich woods, Quebec to Ala., Minn., Neb. and Mo.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; SCHUYLKILL ; LANCASTER ; SUSQUEHANNA ; HUNTINGDON ; CAMBRIA ; ARMSTRONG ; WASHINGTON ; ALLEGHENY ; ERIE ; SOMERSET.

2. *Panax trifolium* L. DWARF GINSENG OR GROUND-NUT. (Man. p. 668 ; I. F. f. 2631.) In moist woods and thickets, N. S. to Ga., Ont., Minn., Iowa and Ill.—*Pennsylvania* : PIKE ; MONROE ; NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; SCHUYLKILL ; HUNTINGDON ; ERIE.

FAMILY 2. UMBELLIFERAE B. Juss. CARROT FAMILY.

Fruit with obscure or obsolete oil-tubes.

Fruit strongly flattened laterally.

1. HYDROCOTYLE.

Fruit not strongly flattened laterally, sometimes turgid.

Seed-face concave.

Stylopodium conic.

Fruit bristly-pubescent.

7. WASHINGTONIA.

Fruit smooth or smooth and glabrous.

Carpels not ribbed.

5. ANTHRISCUS.

Carpels ribbed.

6. SCANDIX.

Stylopodium obsolete or flat.

Leaf-blades entire, perfoliate.

12. BUPLEURUM.

Leaf-blades dissected.

11. CONIUM.

Seed-face flat.

20. AEGOPODIUM.

Fruit with distinct oil-tubes.

Inflorescence glomerate, the flowers aggregated into dense heads.

3. ERYNGIUM.

Inflorescence manifestly umbellate.

A. Fruit strongly flattened dorsally, the lateral ribs of the carpels more or less strongly winged.

a. Oil-tubes solitary in the intervals.

Stylopodium conic.

Fruit not notched at the apex, the carpels not very flat.

30. OXYPOLIS.

Fruit notched at the apex, the carpels very flat.

34. HERACLEUM.

Stylopodium obsolete or flat.

- Corolla white.
 Fruit spineless. 28. ANGELICA.
 Fruit armed with barbed spines. 35. DAUCUS.
 Corolla yellow.
 Carpels with prominent dorsal ribs. 29. LEVISTICUM.
 Carpels with merely filiform dorsal ribs. 33. PASTINACA.
- b. Oil-tubes more than one in the intervals.
 Leaf-blades pinnately or ternately divided.
 Leaf-blades once ternate, the divisions relatively broad, stalked. 32. IMPERATORIA.
 Leaf-blades pinnate or twice ternate, the divisions not stalked. 28. ANGELICA.
 Leaf-blades much divided. 27. CONIOSELINUM.
- B. Fruit more or less flattened laterally, sometimes slightly dorsally flattened.
 Oil-tubes solitary in the intervals, sometimes under the secondary ribs.
 Stylopodium conic.
 Leaf-segments, at least those of the upper leaves, narrowly linear or filiform.
 Involucre wanting.
 Corolla white. 9. CORIANDRUM.
 Corolla yellow. 24. FOENICULUM.
 Involucre present.
 Leaf-blades dissected into many segments.
 Fruit smooth. 22. PTILIMNIUM.
 Fruit bristly or tuberculate. 31. SPERMOLEPIS.
 Leaf-blades with few segments. 17. CARUM.
 Leaf-segments neither narrowly linear nor filiform.
 Seed-face concave or sulcate.
 Fruit glabrous or minutely pubescent. 4. CHAEROPHYLLUM.
 Fruit covered with spines. 8. TORILIS.
 Seed-face flat.
 Fruit orbicular to short-oblong. 15. CICUTA.
 Fruit elongated-oblong. 16. DERINGA.
- Stylopodium obsolete or flat.
 Corolla white.
 Fruit flattened laterally. 13. APIUM.
 Fruit slightly dorsally flattened. 23. AETHUSA.
 Corolla yellow.
 Fruit with winged ribs. 26. THASPIUM.
 Fruit with merely filiform ribs. 14. ZIZIA.
- Oil-tubes more than one on the intervals.
 Stylopodium conic.
 Fruit with equal and prominent ribs. 25. LIGUSTICUM.
 Fruit with almost obsolete ribs. 19. PIMPINELLA.
 Stylopodium obsolete or flat.
 Seed-face concave. 10. ERIGENIA.
 Seed-face flat or nearly so.
 Fruit ribless, spiny. 2. SANICULA.
 Fruit ribbed, spineless.
 Carpels with filiform ribs. 18. TAENIDIA.
 Carpels with corky ribs, at least the lateral ones.
 Oil-tubes continuous around the seed cavity.
 Oli-tubes 2-3 in the intervals. 12. BUPLEURUM.
 21. SIUM.

1. HYDROCOTYLE L.

Leaves with nearly orbicular peltate blades.

Umbels simple.

1. *H. umbellata*.

Umbels proliferous.

2. *H. Canbyi*.

Leaves with reniform not peltate blades.

Umbels nearly sessile : leaf-blades shallowly 5-13-lobed.

3. *H. Americana*.

Umbels long-peduncled : leaf-blades 3-7-cleft.

4. *H. ranunculoides*.

1. **Hydrocotyle umbellata** L. UMBELLATE MARSH-PENNYWORT (Man. p. 671; I. F. f. 2703.) In swamps and low grounds, eastern Mass. to Fla. and the W. I., Minn., Tex. and Mex. Also in S. Am.—*Pennsylvania* : BUCKS, Bristol; PHILADELPHIA; HUNTINGDON; DELAWARE.

2. **Hydrocotyle Canbyi** C. & R. CANBY'S MARSH-PENNYWORT. (Man. p. 671; I. F. f. 2704.) In moist ground, N. J. to Fla.—*Pennsylvania* : BUCKS.

3. **Hydrocotyle Americana** L. AMERICAN MARSH-PENNYWORT. (Man. p. 672; I. F. f. 2706.) In wet places, N. S. to Minn., Pa. and N. C.—*Pennsylvania* : PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; FRANKLIN; LUZERNE; COLUMBIA; HUNTINGDON; SOMERSET; ALLEGHENY.

4. **Hydrocotyle ranunculoides** L. f. FLOATING MARSH-PENNYWORT. (Man. p. 672; I. F. f. 2707.) In ponds and swamps, Pa. to Fla., near the coast, west to Tex.; Ore. to L. Calif. Also in C. and S. Am., Abyssinia and Italy.—*Pennsylvania* : CHESTER; LANCASTER; YORK; DAUPHIN; FRANKLIN.

2. SANICULA L.

Plants perennial : stamens and style exserted.

Petals and anthers greenish white : sepals linear-subulate : fruit about 6 mm. long.

1. *S. Marylandica*.

Petals and anthers yellow : sepals ovate : fruit about 3 mm. long.

2. *S. gregaria*.

Plants biennial : stamens and style included.

Pedicels of the staminate flowers 1-2 times the length of the calyx.

3. *S. Canadensis*.

Pedicels of the staminate flowers 3-4 times the length of the calyx.

4. *S. trifoliata*.

1. **Sanicula Marylandica** L. SANICLE. BLACK SNAKE-ROOT. (Man. p. 672; I. F. f. 2664.) In rich woods, Newf. to Alberta, Ga., and Colo.—*Pennsylvania* : MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; ERIE; ALLEGHENY.

2. **Sanicula gregaria** Bicknell. CLUSTERED SNAKE-ROOT. (Man. p. 673; I. F. f. 2665.) In woods and thickets, Vt. and Ont., to Minn., Va., Kans. and Neb.—*Pennsylvania* : MONROE; BUCKS; NORTHAMPTON.

3. **Sanicula Canadensis** L. SHORT-STYLED SNAKE-ROOT. (Man. p. 673; I. F. f. 2666.) In woodlands, Vt. to Fla., S. Dak. and Tex.—*Pennsylvania* : NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER, FRANKLIN; FULTON; ERIE; ALLEGHENY.

4. *Sanicula trifoliata* Bicknell. LONG-FRUITED SNAKE-ROOT. (Man. p. 673; I. F. f. 2667.) In hilly woods, Vt. to Ont., N. Y. and Ind.—*Pennsylvania*: BUCKS, Pt. Pleasant.

3. ERYNGIUM L.

1. *Eryngium Virginianum* Lam. VIRGINIAN ERYNGO. (Man. p. 673; I. F. f. 2661.) In marshes near the coast, N. J. to Fla., west to Tex.—*Pennsylvania*: BUCKS, Bristol; DELAWARE, Tinicum.

4. CHAEROPHYLLUM L.

1. *Chaerophyllum procumbens* (L.) Crantz. SLENDER CHERVIL. (Man. p. 674; I. F. f. 2678.) In moist ground, N. Y. and Ont., to Mich., N. C. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER LANCASTER; YORK; FRANKLIN; LUZERNE; ALLEGHENY.

1a. *C. procumbens Shortii* T. & G. (Man. p. 674.) WASHINGTON.

5. ANTHRISCUS Hoffm.

1. *Anthriscus Cerefolium* (L.) Hoffm. GARDEN CHERVIL, OR BEAKED-PARSLEY. (Man. p. 674; I. F. f. 2676.) Eastern and southern Pa. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; LANCASTER.

6. SCANDIX L.

1. *Scandix Pecten-Veneris* L. VENUS-, OR LADY'S-COMB. (Man. p. 675; I. F. f. 2683.) In waste places, N. J., D. C., and in ballast about the seaports. Fugitive from Eu.—*Pennsylvania*: PHILADELPHIA.

7. WASHINGTONIA Raf.

Rachis of the leaf-blades glabrous or with short hairs: stylopodium and styles fully 3 mm. long. 1. *W. longistylis*.

Rachis of the leaf-blades with villous hairs: stylopodium and styles about 1 mm. long. 2. *W. Claytonii*.

1. *Washingtonia longistylis* (Torr.) Britton. SMOOTHER SWEET-CICELY. (Man. p. 675; I. F. f. 2681.) In woods, N. S. to the N. W. Terr., Ala., and Kans.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; SOMERSET; ERIE.

2. *Washingtonia Claytonii* (Michx.) Britton. WOOLLY SWEET-CICELY. (Man. p. 675; I. F. f. 2680.) In woods and clearings, N. S. to N. Dak., N. C. and Kans.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; LANCASTER; CHESTER; HUNTINGTON; ERIE.

8. TORILIS Adans.

Umbels head-like, sessile or very short-peduncled.

1. *T. nodosa*.

Umbels with slender rays, long-peduncled.

2. *T. Anthriscus*.

1. *Torilis nodosa* (L.) Gaertn. KNOTTED HEDGE-PARSLEY. (Man. p. 675; I. F. f. 2633.) In waste places, Pa., Md. and Iowa. Also in the Southern States, Calif., the W. Indies and S. Am. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA, ballast.

2. *Torilis Anthriscus* (L.) Gmel. ERECT HEDGE-PARSLEY. (Man. p. 675; I. F. f. 2634.) In waste places, N. J., to D. C. and Ohio. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA, ballast.

9. CORIANDRUM L.

1. *Coriandrum sativum* L. Native of Eu., adv. or nat.—*Pennsylvania*: MONROE; PHILADELPHIA; NORTHAMPTON; LANCASTER.

10. ERIGENIA Nutt.

1. *Erigenia bulbosa* (Michx.) Nutt. HARBINGER OF SPRING. (Man. p. 676; I. F. f. 2709.) Ont., to D. C., Ala., Minn. and Kans.—*Pennsylvania*: YORK, above Wrightsville; WESTMORELAND; ERIE.

11. CONIUM L.

1. *Conium maculatum* L. POISON HEMLOCK. (Man. p. 676; I. F. f. 2684.) In waste places, Quebec and Ont. to Del., Ind. and Mich. Also in Calif. and Mex. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; TIOGA; ERIE; ALLEGHENY.

12. BUPLEURUM L.

1. *Bupleurum rotundifolium* L. HARE'S EAR. THOROUGH-WAX. (Man. p. 677; I. F. f. 2677.) In fields, N. H. to N. C., S. Dak., Kans. and Ark. Also in the Southwest. Nat. from Eu.—*Pennsylvania*: BUCKS; BERKS; CHESTER; LANCASTER; WASHINGTON.

13. APIUM L.

1. *Apium graveolens* L. CELERY. (Man. p. 677; I. F. f. 2688.) In waste places, escaped in Va. and nat. in salt marshes on the coast of Calif. Native of Eu.—*Pennsylvania*: PHILADELPHIA; LANCASTER.

14. ZIZIA Koch.

Basal leaves with 2-3-ternately compound blades.

1. *Z. aurea*.

Basal leaves with simple blades.

2. *Z. cordata*.

1. *Zizia aurea* (L.) Koch. EARLY OR GOLDEN MEADOW-PARSNIP. (Man. p. 678; I. F. f. 2690.) In fields and swamps, N. B. to Ont., S. Dak., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; ALLEGHENY.

2. *Zizia cordata* (Walt.) DC. HEART-LEAVED ALEXANDERS. (Man. p. 679; I. F. f. 2692.) In woods, Conn. to Minn., the N. W. Terr., Ga., Mo., Wyo. and Ore.—*Pennsylvania*: MONROE; BUCKS; DELAWARE; CHESTER; LANCASTER; HUNTINGDON.

15. CICUTA L.

Plant not bulblet-bearing: leaf-segments of a lanceolate type. 1. *C. maculata*.

Plant bulblet-bearing: leaf-segments of a linear type.

2. *C. bulbifera*.

1. *Cicuta maculata* L. WATER HEMLOCK. MUSQUASH ROOT. (Man. p. 679; I. F. f. 2694.) In swamps, N. B. to Man., Fla. and N. Mex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; YORK; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Cicuta bulbifera* L. BULB-BEARING WATER HEMLOCK. (Man. p. 679; I. F. f. 2695.) In swamps, N. S. to Del., Man., Ind. and Neb.—*Pennsylvania*: MONROE; BUCKS; PHILADELPHIA; LANCASTER; LUZERNE; SUSQUEHANNA; HUNTINGDON; ERIE.

16. DERINGA Adans.

1. Deringa Canadensis (L.) Kuntze. HONEWORT. (Man. p. 679; I. F. f. 2696.) In woods, N. B. to S. Dak., Ga. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

17. CARUM L.

1. Carum Carui L. CARAWAY. (Man. p. 679; I. F. f. 2693.) In waste places, Newf. to S. Dak., Pa. and Colo. Adv. from Eu.—*Pennsylvania*: LEBANON; SUSQUEHANNA.

18. TAENIDA Drude.

1. Taenida integerrima (L.) Drude. YELLOW PIMPERNEL. (Man. p. 680; I. F. f. 2670.) In rocky or sandy soil, Quebec to N. C., Ont., Minn., Kans. and Miss.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; MONTGOMERY; LANCASTER; FRANKLIN; WARREN; ALLEGHENY.

19. PIMPINELLA L.

1. Pimpinella Saxifraga (L.) Bennet. PIMPERNEL. (Man. p. 680; I. F. f. 2671.) In waste places, N. Y., Pa., N. J. and Ohio. Adv. from Eu.—*Pennsylvania*: MONROE, Water Gap; NORTHAMPTON, Easton.

20. AEGOPODIUM L.

1. Aegopodium Podagraria L. GOUTWEED. GOUTWORT. (Man. p. 680; I. F. f. 2702.) In waste places, Mass. to Pa. and Del. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON, Bethlehem; PHILADELPHIA; LANCASTER.

21. SIUM L.

Fruit 3 mm. long: leaf-segments 4–17, mostly 5–13 cm. long.

1. *S. cicutaefolium*.

Fruit 2 mm. long: leaf-segments 3–7, mostly 2.5–5 cm. long.

2. *S. Carsoni*.

1. Sium cicutaefolium Gmel. HEMLOCK WATER-PARSNIP. (Man. p. 681; I. F. f. 2685.) In swamps, N. S. to B. C., Fla., La. and Calif.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; LUZERNE; PIKE; CARBON; ARMSTRONG.

2. Sium Carsoni Durand. CARSON'S WATER-PARSNIP. (Man. p. 681; I. F. f. 2686.) In streams, Me. to R. I. and Pa.—*Pennsylvania*: WAYNE; MONROE; CARBON; BUCKS.

22. PTILIMNIUM Raf.

1. Ptilimnium capillaceum (Michx.) Hollick. MOCK BISHOP-WEED. (Man. p. 681; I. F. f. 2699.) In wet soil, especially brackish meadows, Mass. to Fla., west to Tex.—*Pennsylvania*: BUCKS.

23. AETHUSA L.

1. Aethusa Cynapium L. FOOL'S PARSLEY. (Man. p. 682; I. F. f. 2656.) Native of Eu. Adv. or nat. in eastern N. Am.—*Pennsylvania*: PHILADELPHIA; DELAWARE.

24. **FOENICULUM** Adans.

1. **Foeniculum Foeniculum** (L.) Karst. FENNEL. (Man. p. 682; I. F. f. 2669.) In waste places, N. J. and Pa. to Va. and La. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; ALLEGHENY.

25. **LIGUSTICUM** L.

1. **Ligusticum Canadense** (L.) Britton. NONDO. ANGELICO. (Man. p. 683; I. F. f. 2654.) In rich woods, southern Pa. to Ga., Mo. and Ky. —*Pennsylvania*: BEDFORD.

26. **THASPIUM** Nutt.

Leaves with ternate blades: leaflets relatively thick, crenate.

1. *T. trifoliatum*.

Leaves with biternate blades: leaflets relatively thin, incised or lobed.

2. *T. barbinode*.

1. **Thaspium trifoliatum** (L.) Britton. PURPLE MEADOW PARSNIP. (Man. p. 684; I. F. f. 2651.) In woods, R. I. to N. J., Tenn. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE.

1a. **T. trifoliatum aureum** (Nutt.) Britton. (Man. p. 684.) Range of type.—NORTHAMPTON; LANCASTER; PERRY; SOMERSET.

2. **Thaspium barbinode** (Michx.) Nutt. HAIRY-JOINTED MEADOW PARSNIP. (Man. p. 684; I. F. f. 2652.) Along streams, Ont. to Minn., Kans., Fla., Ky. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; PHILADELPHIA; CAMBRIA; FAYETTE; ERIE; ALLEGHENY.

27. **CONIOSELINUM** Hoffm.

1. **Conioselinum Chinense** (L.) B.S.P. HEMLOCK-PARSLEY. (Man. p. 684; I. F. f. 2638.) In cold swamps, Lab. to Mass., N. Y., N. C., Minn., Wis. and Ind.—*Pennsylvania*: HUNTINGDON, Spruce Creek; ALLEGHENY, Chartier's Creek.

28. **ANGELICA** L.

Branches of the umbel glabrous or nearly so: leaves with acute or acutish segments.

Wings broader than the carpel-body: oil-tubes usually solitary in the intervals.

1. *A. Curtisii*.

Wings narrower than the carpel-body: oil-tubes numerous in the intervals.

2. *A. atropurpurea*.

Branches of the umbel copiously pubescent: leaves with obtuse segments.

3. *A. villosa*.

1. **Angelica Curtisii** Buckl. CURTIS' ANGELICA. (Man. p. 684; I. F. f. 2635.) In woods, Pa. to N. C. and Ga.—*Pennsylvania*: BLAIR, Burgoyne's Gap; CAMBRIA.

2. **Angelica atropurpurea** L. GREAT OR PURPLE-STEMMED ANGELICA. (Man. p. 685; I. F. f. 2636.) In swamps and moist ground, Lab. to Minn., Del. and Ill.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; YORK; LANCASTER; LUZERNE.

3. *Angelica villosa* (Walt.) B.S.P. PUBESCENT ANGELICA. (Man. p. 685; I. F. f. 2637.) In dry soil, Conn. to Fla., Minn., Tenn. and Mo.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; YORK; LANCASTER; LUZERNE; BERKS; FRANKLIN; HUNTINGDON; ALLEGHENY; ERIE.

29. LEVISTICUM Koch.

1. *Levisticum Levisticum* (L.) Karst. LOVAGE. (Man. p. 685.) Introduced into the northeastern United States.—*Pennsylvania*: WAYNE, roadsides near Mt. Pleasant.

30. OXYPOLIS Raf.

1. *Oxypolis rigidus* (L.) Britton. COWBANE. HEMLOCK. (Man. p. 686; I. F. f. 2640.) In swamps, N. Y. to Fla., Minn., Mo., and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; SUSQUEHANNA.

31. SPERMOLEPIS Raf.

1. *Spermolepis divaricatus* (Walt.) Britton. ROUGH-FRUITED SPERMOLEPIS. (Man. p. 686; I. F. f. 2697.) Neb. to Tex., N. C. and Fla. Also in ballast at Philadelphia.—*Pennsylvania*: PHILADELPHIA, ballast.

32. IMPERATORIA L.

1. *Imperatoria Ostruthium* L. MASTERWORT. (Man. p. 688; I. F. f. 2643.) In fields, Pa. and Mich. Reported from Newf. Nat. or adv. from Eu.—*Pennsylvania*: MONROE, fields near Long Pond.

33. PASTINACA L.

1. *Pastinaca sativa* L. WILD PARSNIP. (Man. p. 688; I. F. f. 2642.) Roadsides and waste places. Nat. from Eu.—*Pennsylvania*: MONROE; TIOGA; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; FRANKLIN; ERIE; ALLEGHENY.

34. HERACLEUM L.

1. *Heracleum lanatum* Michx. COW-PARSNIP. (Man. p. 688; I. F. f. 2641.) In moist ground, Newf. to Alaska, N. C., Mo., Utah and Calif.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; BUCKS; DELAWARE; CHESTER; ALLEGHENY.

35. DAUCUS L.

1. *Daucus Carota* L. WILD CARROT. (Man. p. 688; I. F. f. 2632.) In fields and waste places. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

FAMILY 3. CORNACEAE Link. DOGWOOD FAMILY.

Flowers perfect: drupe with a 2-celled and 2-seeded stone: leaves mostly opposite.

1. CORNUS.

Flowers polygamo-dioecious: drupe with a 1-celled and 1-seeded stone: leaves alternate.

2. NYSSA.

1. **CORNUS** L.

Flowers in heads subtended by corolla-like involucre of 4-6 white or whitish bracts.

Low herbaceous shrubs : fruit globular : bracts of the involucre pointed.

1. *C. Canadensis*.

Tree or woody shrub : fruit oval : bracts of the involucre notched.

2. *C. florida*.

Flowers in open corymb-like cymes, not involucre.

Leaves opposite, remote.

Leaf-blades copiously pubescent beneath, at least when young.

Leaf-blades orbicular or ovate-orbicular.

3. *C. circinata*.

Leaf-blades ovate or ovate-lanceolate.

Fruit blue.

4. *C. Amomum*.

Fruit white.

5. *C. Baileyi*.

Leaf-blades glabrous or nearly so beneath.

Twigs purple : leaf-blades ovate, abruptly pointed.

6. *C. stolonifera*.

Twigs gray : leaf-blades ovate-lanceolate, acuminate.

7. *C. candidissima*.

Leaves alternate, approximate at the end of the branches.

8. *C. alternifolia*.

1. *Cornus Canadensis* L. LOW OR DWARF CORNEL. BUNCH-BERRY. (Man. p. 689 ; I. F. f. 2710.) In low woods, Newfoundland to Alaska, N. J., Ind., Minn., Colo. and Calif.—*Pennsylvania* : PIKE ; MONROE ; SCHUYLKILL ; CARBON ; TIoga ; SULLIVAN ; CENTRE ; MIFFLIN ; HUNTINGDON ; ERIE ; SOMERSET.

2. *Cornus florida* L. FLOWERING DOGWOOD. (Man. p. 690 ; I. F. f. 2712.) In woods, Me. and Ont. to Fla., Ky., Mo. and Tex.—*Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; PHILADELPHIA ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; HUNTINGDON ; ALLEGHENY.

3. *Cornus circinata* L'Her. ROUND-LEAVED CORNEL OR DOGWOOD. (Man. p. 690 ; I. F. f. 2713.) In shady, often rocky situations, N. S. to Man., Va., Ill. and Iowa.—*Pennsylvania* : BUCKS ; SCHUYLKILL ; LUZERNE ; LANCASTER ; HUNTINGDON ; ERIE.

4. *Cornus Amomum* Mill. KINNIKINNIK. (Man. p. 690 ; I. F. f. 2714.) In wet soil, N. B. to Ont., Fla., S. Dak. and Tex.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; YORK ; FRANKLIN ; PERRY ; CRAWFORD ; SOMERSET ; SUSQUEHANNA ; ALLEGHENY.

5. *Cornus Baileyi* Coult. & Evans. BAILEY'S CORNEL OR DOGWOOD. (Man. p. 690 ; I. F. f. 2716.) Lake shores and in moist ground, Pa. to Minn. and the N. W. Terr., Wyo. and Neb.—*Pennsylvania* : ERIE ; Presque Isle.

6. *Cornus stolonifera* Michx. RED-OSIER CORNEL OR DOGWOOD. (Man. p. 690 ; I. F. f. 2717.) In moist soil, N. S. to Yukon Terr., Va., Ky., Neb., Ariz. and Calif.—*Pennsylvania* : NORTHAMPTON ; CENTRE ; CRAWFORD ; ERIE ; ALLEGHENY.

7. *Cornus candidissima* Marsh. PANICLED CORNEL OR DOGWOOD. (Man. p. 690; I. F. f. 2718.) In rich soil, Me. to N. C., Minn. and Neb.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; MONTOUR; LANCASTER; HUNTINGDON; BEDFORD; ALLEGHENY.

8. *Cornus alternifolia* L. f. ALTERNATE-LEAVED CORNEL OR DOGWOOD. (Man. p. 691; I. F. f. 2720.) In woods, N. S. to Ga., Ont., W. Va., Minn. and Ala.—*Pennsylvania*: LACKAWANNA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; BLAIR; COLUMBIA; SOMERSET.

2. NYSSA L.

1. *Nyssa sylvatica* Marsh. PEPPERIDGE. SOUR GUM TUPELO. (Man. p. 691; I. F. f. 2721.) In rich moist soil, Me. and Ont. to Fla., Mich. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; YORK; LEBANON; SCHUYLKILL; FRANKLIN; HUNTINGDON; ALLEGHENY.

Series 2. GAMOPETALAE.

Order 1. ERICALES.

Gynoecium superior: fruit capsular, rarely fleshy.

Corolla essentially polypetalous.

Ovary 3-celled: leaves deciduous: shrubs or trees.

Fam. 1. CLETHRACEAE.

Ovary 4-5-celled: leaves persistent: herbs. Fam. 2. PYROLACEAE.

Corolla manifestly gamopetalous (except in *Monotropa* and *Hypopitys* of the MONOTROPACEAE and *Ledum* of the ERICACEAE).

Herbaceous saprophytes destitute of green leaves.

Fam. 3. MONOTROPACEAE.

Shrubs or trees with normal green leaves.

Fam. 4. ERICACEAE.

Gynoecium inferior: fruit a berry or drupe.

Fam. 5. VACCINIACEAE.

FAMILY 1. **CLETHRACEAE** Klotzsch. WHITE ALDER FAMILY.

1. CLETHRA L.

1. *Clethra alnifolia* L. SWEET PEPPERBUSH. WHITE ALDER. (Man. p. 692; I. F. f. 2724.) In wet soil, Me. to northern N. J. and Fla., mostly near the coast.—*Pennsylvania*: PIKE, Twelve Mile Pond; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER.

FAMILY 2. **PYROLACEAE** Agardh. WINTERGREEN FAMILY.

Style elongated: flowers solitary or racemose.

Petals more or less converging: capsule-valves cobwebby: flowers racemose.

1. PYROLA.

Petals widely spreading: capsule-valves glabrous: flowers solitary.

2. MONESES.

Style very short: flowers corymbed or umbellate.

3. CHIMAPHILA.

1. PYROLA L.

Style declined: stamens declined.

Sepals oblong or lanceolate: leaf-blades lustrous.

1. *P. rotundifolia*.

Sepals ovate to triangular: leaf-blades not lustrous.

Leaf-blades orbicular, leathery, mostly shorter than the petioles.

2. *P. chlorantha*.

Leaf-blades oval, membranous, mostly longer than the petioles.

3. *P. elliptica*.

Style straight: stamens converging.

4. *P. secunda*.

1. *Pyrola rotundifolia* L. ROUND-LEAVED WINTERGREEN. (Man. p. 693; I. F. f. 2726.) In dry woods, N. S. to S. Dak., Ga. and Ohio. Also in Eu.—*Pennsylvania*: PIKE; MONROE; CARBON; COLUMBIA; NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; BLAIR; SOMERSET; ALLEGHENY.

2. *Pyrola chlorantha* Sw. GREENISH-FLOWERED WINTERGREEN. (Man. p. 693; I. F. f. 2727.) In dry woods, Lab. to B. C., D. C., Ill., Neb. and Colo. Also in Eu.—*Pennsylvania*: MONROE; BUCKS; PIKE; DELAWARE; BERKS; LANCASTER; FRANKLIN; LUZERNE; TIOGA; BLAIR; HUNTINGDON.

3. *Pyrola elliptica* Nutt. SHIN-LEAF. (Man. p. 693; I. F. f. 2728.) In rich, mostly dry woods, N. S. to B. C., D. C., Ill., Mich. and in the Rocky Mts. to N. Mex.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; BERKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; SOMERSET; ALLEGHENY; ERIE.

4. *Pyrola secunda* L. ONE-SIDED WINTERGREEN. (Man. p. 694; I. F. f. 2733.) In woods and thickets, Lab. to Alaska, D. C., Neb., along the Rocky Mts. to Mex. and to Calif.—*Pennsylvania*: PIKE; DELAWARE; CHESTER; LANCASTER; COLUMBIA; TIOGA; SULLIVAN; HUNTINGDON; BLAIR; CAMBRIA; SUSQUEHANNA.

4a. *P. secunda pumila* Paine. (Man. p. 694.) A low northern form. —MONROE; WAYNE; SCHUYLKILL.

2. MONESES Salisb.

1. *Moneses uniflora* (L.) A. Gray. ONE-FLOWERED WINTERGREEN. (Man. p. 694; I. F. f. 2734.) In woods, Lab. to Alaska, Conn., Pa., Mich., in the Rocky Mts. to Col. and to Ore. Also in Eu. and Asia. N. Pa., deep woods.—*Pennsylvania*: northern tier of counties.

3. CHIMAPHILA Pursh.

Sepals longer than broad: leaves variegated; blades broadest below the middle.

1. *C. maculata*.

Sepals as broad as long: leaves not variegated; blades broadest above the middle.

2. *C. umbellata*.

1. *Chimaphila maculata* (L.) Pursh. SPOTTED WINTERGREEN. (Man. p. 695; I. F. f. 2735.) In dry woods, Me. and Ont. to Minn., Ga. and Miss.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

2. *Chimaphila umbellata* (L.) Nutt. PIPSISSEWA. PRINCE'S PINE. (Man. p. 695; I. F. f. 2736.) In dry woods, N. S. to B. C., Ga., Mex. and Calif. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS;

DELAWARE; CHESTER; LANCASTER; YORK; BLAIR; COLUMBIA; ALLEGHENY.

FAMILY 3. **MONOTROPACEAE** Lindl. INDIAN PIPE FAMILY.

Corolla of united petals, persistent.

1. **PTEROSPORA**.

Corolla of distinct deciduous petals.

Flowers solitary: plant white, drying black.

2. **MONOTROPA**.

Flowers racemose: plant yellowish or red.

3. **HYPOPITYS**.

1. **PTEROSPORA** Nutt.

1. **Pterospora Andromedea** Nutt. GIANT BIRD'S-NEST. PINE-DROPS. (Man. p. 695; I. F. f. 2737.) In rich woods, Quebec and N. H. to Pa., B. C. and Calif., south in the Rocky Mts. to Ariz.—*Pennsylvania*:

2. **MONOTROPA** L.

1. **Monotropa uniflora** L. INDIAN PIPE. (Man. p. 696; I. F. f. 2739.) In moist rich woods, Anticosti to Fla., B. C. and Col. Also in Japan and the Himalayas.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; COLUMBIA; FRANKLIN; HUNTINGDON; ALLEGHENY; ERIE.

3. **HYPOPITYS** Adans.

1. **Hypopitys Hypopitys** (L.) Small. PINE-SAP. FALSE BEECH-DROPS. (Man. p. 693; I. F. f. 2740.) In dry woods, Anticosti to Fla., B. C. and Ariz. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; LUZERNE; DAUPHIN; FRANKLIN; FULTON; CENTRE; CRAWFORD; ALLEGHENY.

FAMILY 4. **ERICACEAE** DC. HEATH FAMILY.

Fruit a septicidal capsule: anthers unappendaged.

Petals distinct.

1. **LEDUM**.

Petals more or less united.

Corolla slightly irregular: seeds flat, winged.

Stamens exserted: corolla funnelform to campanulate.

Lower lip of the corolla divided to the base.

2. **RHODORA**.

Lower lip of the corolla not divided.

Corolla funnelform: leaves deciduous.

3. **AZALEA**.

Corolla campanulate: leaves persistent.

4. **RHODODENDRON**.

Stamens included: corolla urn-shaped.

5. **MENZIESIA**.

Corolla regular: seed rounded or angled.

6. **KALMIA**.

Fruit a loculicidal capsule, sometimes inclosed in the fleshy hypanthium or a drupe.

A. Fruit a dry capsule: calyx or hypanthium not essentially accrescent.

a. Anther-sacs opening by terminal pores or chinks.

Sepals imbricated at least in the bud.

Capsules opening by a simple layer of 5 valves.

7. **LEUCOTHOE**.

Capsule opening by two layers, the outer 5-valved, the inner 10-valved.

8. **CHAMAEDAPHNE**.

Sepals valvate or separated in the bud.

* Anthers with two awn-like appendages on the back.

Corolla cylindric or urn-shaped.

9. **PIERIS**.

Corolla globular.

10. **ANDROMEDA**.

- ** Anthers unappendaged. 11. XOLISMA.
 b. Anther-sacs opening by longitudinal valves.
 Corolla contracted at the throat : upright shrubs or trees. 12. OXYDENDRON.
 Corolla expanded at the throat : creeping shrubby plant. 13. EPIGAEA.
 B. Fruit a drupe or capsule enclosed in the accrescent hypanthium.
 Fruit a capsule enclosed in the fleshy hypanthium. 14. GAULTHERIA.
 Fruit a drupe with 4-5 nutlets. 15. ARCTOSTAPHYLOS.

1. LEDUM L.

1. *Ledum Groenlandicum* Oeder. LABRADOR TEA. (Man. p. 698; I. F. f. 2742.) In bogs and swamps, Greenland to B. C., Mass., N. J. and Wis.—*Pennsylvania*: MONROE; LUZERNE.

2. RHODORA L.

1. *Rhodora Canadensis* L. RHODORA. (Man. 699; I. F. f. 2748.) In bogs and on wet hillsides, Newf. to N. J., Quebec, central N. Y. and Pa.—*Pennsylvania*: SUSQUEHANNA; LACKAWANNA; MONROE, abundant.

3. AZALEA L.

Corollas expanding before the leaves.

Corollas pink or white.

Leaf-blades strigose beneath : corolla-tube hirsute. 1. *A. nudiflora*.

Leaf-blades canescent beneath : corolla-tube glandular-pubescent.

2. *A. canescens*.

3. *A. lutea*.

Corollas yellow, red or orange.

Corollas expanding after the leaves.

Leaves with the midnerve glabrous beneath.

4. *A. arborescens*.

Leaves with the midnerve strigillose beneath.

5. *A. viscosa*.

1. *Azalea nudiflora* L. WILD HONEYSUCKLE. PINKSTER-FLOWER. (Man. p. 698; I. F. f. 2743.) In dry woods and thickets, Me. to Ill., Fla. and Tex. Reported from Canada.—*Pennsylvania*: MONROE; PIKE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LEBANON; BERKS; HUNTINGDON; ALLEGHENY.

1a. *A. nudiflora glandifera* Porter.—MONROE; NORTHAMPTON; LANCASTER; DELAWARE.

2. *Azalea canescens* Michx. MOUNTAIN AZALEA. (Man. p. 698; I. F. f. 2744.) In woods, Mass., N. Y., to Fla. and La.—*Pennsylvania*: MONROE; LACKAWANNA; PIKE; SUSQUEHANNA.

3. *Azalea lutea* L. FLAME AZALEA. (Man. p. 698; I. F. f. 2745.) In dry woods, N. Y., and Pa. to Ga.—*Pennsylvania*: FRANKLIN; VENANGO; SOMERSET.

4. *Azalea arborescens* Pursh. SMOOTH OR TREE AZALEA. (Man. p. 698; I. F. f. 2746.) In woods, Pa. to N. C. and Tenn.—*Pennsylvania*: LANCASTER; PERRY; YORK; BEDFORD; CAMBRIA; SOMERSET; ALLEGHENY.

5. *Azalea viscosa* L. SWAMP PINK. WHITE AZALEA. (Man. p. 698; I. F. f. 2747.) In swamps, Me. to Ohio, Fla., and Tex.—*Penn-*

sylvania: PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; PERRY; FRANKLIN; SOMERSET; WYOMING; FAYETTE.

5a. *A. viscosa hispida* (Pursh) Britton. (Man. p. 699.) Borders of ponds; Shawangunk Mts. to Pa. and N. Y.; MONROE.

5b. *A. viscosa glauca* Michx. (Man. p. 699.) Mass. to Va. PIKE; MONROE; LANCASTER; LEBANON; SOMERSET; DELAWARE.

5c. *A. viscosa nitida* (Pursh) Britton. (Man. p. 699.) Mass. to Va. BERKS; LANCASTER, Smithville.

4. RHODODENDRON L.

1. *Rhododendron maximum* L. GREAT LAUREL. ROSE BAY. (Man. p. 699; I. F. f. 2750.) In woods and along streams. N. S. to Ont., O. and Ga.—*Pennsylvania*: MONROE; LYCOMING; PIKE; LACKAWANNA; SCHUYLKILL; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; BLAIR; CAMBRIA; SOMERSET; ERIE; ALLEGHENY.

5. MENZIESIA J. E. Smith.

1. *Menziesia pilosa* (Michx.) Pers. ALLEGHANY MENZIESIA. (Man. p. 700; I. F. f. 2752.) In mountain woods, Pa. to Ga.—*Pennsylvania*: LEBANON, Cold Springs; SOMERSET.

6. KALMIA L.

Flowers in compound umbels or corymbs: twigs terete.

Corolla 6-10 mm. broad: leaf-blades oblong.

Corolla 16-25 mm. broad: leaf-blades elliptic to oval.

Flowers in simple terminal umbels: twigs 2-edged.

1. *K. angustifolia*.

2. *K. latifolia*.

3. *K. glauca*.

1. *Kalmia angustifolia* L. SHEEP LAUREL. LAMBKILL. (Man. p. 701; I. F. f. 2756.) In moist soil, Newf. to Hudson Bay, south to Ga. and Mich.—*Pennsylvania*: PIKE; MONROE; LUZERNE; SCHUYLKILL; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; BERKS; LANCASTER.

2. *Kalmia latifolia* L. MOUNTAIN LAUREL. CALICO-BUSH. (Man. p. 701; I. F. f. 2757.) In woods, N. B. to Ont., Ohio, Fla. and La.—*Pennsylvania*: MONROE; LUZERNE; SCHUYLKILL; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; BERKS; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

3. *Kalmia glauca* Ait. PALE OR SWAMP LAUREL. (Man. p. 701; I. F. f. 2758.) In bogs, Newf. to Alaska, Conn., N. J., Pa., Mich. and Cal.—*Pennsylvania*: WAYNE; SUSQUEHANNA; MONROE; PIKE.

7. LEUCOTHOE D. Don.

1. *Leucothoe racemosa* (L.) A. Gray. SWAMP LEUCOTHOE. (Man. p. 703; I. F. f. 2766.) In swamps and moist thickets, Mass. to Pa., Fla. and La.—*Pennsylvania*: BUCKS; DELAWARE; LANCASTER; FRANKLIN.

8. ANDROMEDA L.

1. *Andromeda polifolia* L. WILD ROSEMARY. (Man. p. 703; I. F. f. 2767.) In bogs, Newf. to Alaska, N. J., Pa., Mich. and B. C. Also in Eu. and Asia.—*Pennsylvania*: PIKE; WAYNE; SUSQUEHANNA; MONROE.

9. *PIERIS* D. Don.

1. *Pieris mariana* (L.) Benth. & Hook. STAGGER-BUSH. (Man. p. 704; I. F. f. 2770.) In sandy soil, R. I. to Fla., Tenn. and Ark.—*Pennsylvania*: BUCKS, Bristol; MONTGOMERY; DELAWARE; CHESTER; LANCASTER.

10. *XOLISMA* Raf.

1. *Xolisma ligustrina* (L.) Britton. PRIVET ANDROMEDA. (Man. p. 704; I. F. f. 2771.) In swamps and wet soil, Canada (?), Me. to N. Y., Fla., Tenn. and Ark.—*Pennsylvania*: PIKE; MONROE; LUZERNE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; MONTGOMERY; LANCASTER; FRANKLIN; HUNTINGDON; FAYETTE; ALLEGHENY.

11. *CHAMAEDAPHNE* Moench.

1. *Chamaedaphne calyculata* (L.) Moench. LEATHER-LEAF. (Man. p. 705; I. F. f. 2772.) In bogs and swamps, Newf. to Alaska, N. J., Ga., Ills., Mich. and B. C. Also in Eu. and Asia.—*Pennsylvania*: PIKE; MONROE; LACKAWANNA; CENTRE; LUZERNE; TIOGA.

12. *OXYDENDRUM* DC.

1. *Oxydendrum arboreum* (L.) DC. SOUR-WOOD. SORREL-TREE. (Man. p. 705; I. F. f. 2773.) In woods, Ohio and Pa. to Va., Fla. and Miss.—*Pennsylvania*: FAYETTE, Mt. Pleasant.

13. *EPIGAEA* L.

1. *Epigaea repens* L. TRAILING ARBUTUS. MAYFLOWER. GROUND LAUREL. (Man. p. 705; I. F. f. 2774.) In sandy or rocky woods, Newf. to the N. W. Terr., Fla., Ky. and Mich.—*Pennsylvania*: MONROE; PIKE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; DAUPHIN; FRANKLIN; BEDFORD; HUNTINGDON; LEBANON; SOMERSET; ALLEGHENY.

14. *GAULTHERIA* L.

1. *Gaultheria procumbens* L. CREEPING WINTERGREEN. (Man. p. 705; I. F. f. 2775.) In woods, Newf. to Man., Ga. and Mich.—*Pennsylvania*: LACKAWANNA; PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; PHILADELPHIA; SCHUYLKILL; COLUMBIA; LUZERNE; CENTRE; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

15. *ARCTOSTAPHYLOS* Adans.

1. *Arctostaphylos Uva-Ursi* (L.) Spreng. RED BEARBERRY. KINNICKINIC. (Man. p. 706; I. F. f. 2776.) In dry, sandy or rocky soil, Lab. to Alaska, N. J., Pa., Ill., Neb., Colo. and Calif. Also in Eu. and Asia.—*Pennsylvania*: BUCKS; ERIE, Presque Isle; CLINTON.

FAMILY 5. *VACCINIACEAE* Lindl. HUCKLEBERRY FAMILY.

Ovary 10-celled: fruit a berry-like drupe with 10 nutlets. 1. *GAYLUSSACIA*.
Ovary 4-5-celled: fruit a many-seeded berry.

A. Petals more or less united.

Upright shrubs or trees: ovary wholly inferior: berries variously colored.

Corolla open campanulate. 2. POLYCODIUM.
 Corolla globular, ovoid or urn-shaped to cylindric. 3. VACCINIUM.
 Creeping shrubby plants: ovary half inferior: berries white.

B. Petals distinct.

4. CHIOGENES.
 5. OXYCOCCUS.

1. GAYLUSSACIA H.B.K.

Leaves deciduous; blades relatively thin, entire.

Corolla conic: leaves sticky with a resinous secretion. 1. *G. resinosa*.

Corolla campanulate to globose-campanulate: leaves not sticky.

Drupe with a bloom: leaf-blades pale beneath. 2. *G. frondosa*.

Drupe without a bloom: leaf-blades not pale beneath. 3. *G. dumosa*.

Leaves persistent; blades leathery, serrate.

4. *G. brachycera*.

1. *Gaylussacia resinosa* (Ait.) T. & G. BLACK OR HIGH-BUSH HUCKLEBERRY. (Man. p. 707; I. F. f. 2780.) In woods and thickets. Newf. to Ga., Man., Wis. and Ky.—*Pennsylvania*: MONROE; PIKE; LEBANON; BUCKS; NORTHAMPTON; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; SOMERSET; ALLEGHENY.

1a. *G. resinosa leucocarpa* Porter. MONROE; HUNTINGDON.

2. *Gaylussacia frondosa* (L.) T. & G. BLUE TANGLE. TANGLE-BERRY. (Man. p. 707; I. F. f. 2779.) In moist woods, N. H. to Fla., Ohio and La.—*Pennsylvania*: MONROE; PIKE; LACKAWANNA; CARBON; SCHUYLKILL; NORTHAMPTON; MONTGOMERY; DELAWARE; LANCASTER; CHESTER; LEBANON.

3. *Gaylussacia dumosa* (Andr.) T. & G. DWARF OR BUSH HUCKLEBERRY. (Man. p. 708; I. F. f. 2781.) In sandy swamps, Newf. to N. Y., Fla. and La.—*Pennsylvania*: LANCASTER; CHESTER; MONTGOMERY.

4. *Gaylussacia brachycera* (Michx.) A. Gray. BOX-HUCKLEBERRY. (Man. p. 708; I. F. f. 2782.) In dry woods, Pa. to Va.—*Pennsylvania*: PERRY, near Bloomfield.

2. VACCINIUM L.

Corolla cylindric or nearly so, twice or thrice longer than thick.

1. *V. corymbosum*.

Corolla urn-shaped, oblong or cylindric-oblong, once or twice as long as thick.

Leaf-blades not glaucous beneath.

Leaf-blades entire or essentially so, pubescent beneath.

Drupe without bloom: leaf-blades of an oval type: shrub 10–50 dm. tall.

2. *V. atrococcum*.

Drupe with bloom: leaf-blades of an oblong type: shrub 1.5–6 dm. tall.

3. *V. Canadense*.

Leaf-blades manifestly serrulate, glabrous or nearly so.

4. *V. Pennsylvanicum*.

Leaf-blades glaucous beneath.

Drupe without bloom.

5. *V. nigrum*.

Drupe with bloom.

6. *V. vacillans*.

1. *Vaccinium corymbosum* L. HIGH-BUSH OR TALL BLUEBERRY. (Man. p. 710; I. F. f. 2788.) In swamps, thickets and low woods,

Newf. to Minn., Va. and La.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; MONTGOMERY; HUNTINGDON.

2. *Vaccinium atrococcum* (A. Gray) Heller. BLACK HUCKLEBERRY. (Man. p. 710; I. F. f. 2789.) In swamps and wet woods, N. B. and Ont. to N. J. and Pa.—*Pennsylvania*: WAYNE; MONROE; CARBON; CHESTER; MONTGOMERY; LANCASTER; DAUPHIN; FRANKLIN; ERIE.

3. *Vaccinium Canadense* Richards. CANADA BLUEBERRY. (Man. p. 710; I. F. f. 2790.) In moist places, Lab. to the N. W. Terr., Va., Ill. and Mich.—*Pennsylvania*: MONROE; NORTHAMPTON.

4. *Vaccinium Pennsylvanicum* Lam. DWARF OR LOW-BUSH BLUEBERRY. (Man. p. 710; I. F. f. 2791.) In dry, rocky or sandy soil, Newf. to the N. W. Terr., N. J., Ill. and Mich.—*Pennsylvania*: PIKE; MONROE; LUZERNE; TIOGA; NORTHAMPTON; BUCKS; SCHUYLKILL; LANCASTER; FRANKLIN; HUNTINGDON; FULTON; SOMERSET; ALLEGHENY.

5. *Vaccinium nigrum* (Wood) Britton. LOW BLACK BLUEBERRY. (Man. p. 710; I. F. f. 2792.) In dry rocky soil, Me. to N. J., Pa. and Mich.—*Pennsylvania*: MONROE.

6. *Vaccinium vacillans* Kalm. LOW BLUEBERRY. BLUE HUCKLEBERRY. (Man. p. 710; I. F. f. 2793.) In dry soil, Me. and N. H. to Ont., Mich., N. C. and Mo.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; MONTGOMERY; BUCKS; DELAWARE; CHESTER; LANCASTER; SCHUYLKILL; LUZERNE; FRANKLIN; HUNTINGDON.

2. POLYCODIUM Raf.

1. *Polycodium stamineum* L. DEERBERRY. BUCKBERRY. (Man. p. 708; I. F. f. 2796.) In dry woods and thickets, Me. to Ont., Minn., Fla., Ky. and La.—*Pennsylvania*: PIKE; MONROE; LUZERNE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; MONTGOMERY; PHILADELPHIA; LANCASTER; FRANKLIN; HUNTINGDON; CENTRE; SOMERSET; ALLEGHENY.

3. CHIIOGENES Salisb.

1. *Chiogenes hispidula* (L.) T. & G. CREEPING SNOWBERRY. (Man. p. 711; I. F. f. 2798.) In cold wet woods and bogs, Newf. to B. C., N. C. and Mich.—*Pennsylvania*: WAYNE; SUSQUEHANNA; TIOGA; MONROE.

4. OXYCOCCUS Hill.

Berry mostly 6-10 mm. in diameter: leaf-blades ovate, acute: petals 4-6 mm. long.

1. *O. Oxycoccus*.

Berry mostly 10-18 mm. in diameter: leaf-blades oblong or oval, obtuse: petals 7.5-8.5 mm. long.

2. *O. macrocarpus*.

1. *Oxycoccus Oxycoccus* (L.) MacM. SMALL OR EUROPEAN CRANBERRY. (Man. p. 711; I. F. f. 2799.) In cold bogs, Lab. to Alaska, N. J., Mich. and B. C. Also in Eu. and Asia.—*Pennsylvania*: WAYNE; PIKE; MONROE; BRADFORD.

2. *Oxycoccus macrocarpus* (Ait.) Pers. LARGE OR AMERICAN CRANBERRY. (Man. p. 711; I. F. f. 2800.) In bogs, Newf. to the N. W. Terr., N. C., W. Va., Mich. and Minn.—*Pennsylvania*: WAYNE; PIKE; MON-

ROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER;
LUZERNE; HUNTINGDON; CENTRE; SOMERSET; CRAWFORD; ERIE.

Order 2. PRIMULALES.

FAMILY I. PRIMULACEAE Vent. PRIMROSE FAMILY.

Plants caulescent (the stem-leaves mere scales in *Trientalis*): corolla-lobes erect or merely spreading.

Corolla-lobes imbricated at least in the bud.

1. SAMOLUS.

Corolla-lobes valvate or convolute in the bud.

Capsule opening by longitudinal valves.

Flower-cluster not subtended by a whorl of leaf-like bracts: corolla yellow.

Androecium not accompanied by staminodia: corolla-lobes convolute.

2. LYSIMACHIA.

Androecium with staminodia.

Anthers linear: corolla without teeth in the sinuses: flowers axillary to leaf-like bracts.

3. STEIRONEMA.

Anthers oblong: corolla with teeth in the sinuses: flowers in dense peduncled axillary spike-like racemes.

4. NAUMBURGIA.

Flower-cluster subtended by a whorl of leaf-like bracts: corolla white.

5. TRIENTALIS.

Capsule circumscissile.

6. ANAGALLIS.

Plants scapose: corolla-lobes reflexed.

7. DODECATHEON.

1. SAMOLUS L.

1. *Samolus floribundus* H.B.K. WATER PIMPERNEL. BROOKWEED.
(Man. p. 715; I. F. f. 2810.) In swamps and brooks, N. B. to Fla., B. C., Tex. and Calif.—*Pennsylvania*: BUCKS; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON.

2. LYSIMACHIA L.

Leaves whorled, or rarely some of the nodes with only a pair.

Corolla rotate-campanulate, without dark streaks.

Flowers in terminal panicles: corolla with glabrous lobes.

1. *L. vulgaris*.

Flowers axillary: corolla with glandular-ciliolate lobes.

2. *L. punctata*.

Corolla rotate, dark-streaked.

3. *L. quadrifolia*.

Leaves merely opposite or rarely some of the nodes with a single leaf.

Flowers in a terminal narrow raceme, plants with erect stems.

4. *L. terrestris*.

Flowers axillary to leaf-like bracts: plants with creeping stem.

5. *L. Nummularia*.

1. *Lysimachia vulgaris* L. GOLDEN OR YELLOW LOOSESTRIFE.
(Man. p. 715; I. F. f. 2811.) In fields and along roadsides, Me. to N. Y. and Pa. Nat. from Eu.—*Pennsylvania*: YORK, YORK FURNACE; DELAWARE, Tinicum.

2. *Lysimachia punctata* L. SPOTTED LOOSESTRIFE. (Man. p. 716; I. F. f. 2812.) In waste places, N. S. to N. J. and Pa. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON.

3. *Lysimachia quadrifolia* L. WHORLED LOOSESTRIFE. (Man. p. 716; I. F. f. 2813.) In thickets, N. B. to Minn., Ga. and Wis.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

4. *Lysimachia terrestris* (L.) B.S.P. BULB-BEARING LOOSESTRIFE. (Man. p. 716; I. F. f. 2814.) In swamps and moist thickets, Newf. to Man., Ga. and Ark.—*Pennsylvania*: WAYNE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; PERRY; LUZERNE; CLARION; CRAWFORD; ALLEGHENY.

5. *Lysimachia Nummularia* L. MONEYWORT. CREEPING LOOSESTRIFE. (Man. p. 716; I. F. f. 2815.) In moist places, Newf. to N. J., Pa. and Ind. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; LANCASTER; DAUPHIN; YORK; ALLEGHENY.

3. STEIRONEMA Raf.

Upper cauline leaves with ovate or broadly lanceolate blades.

1. *S. ciliatum*.

Upper cauline leaves with narrowly lanceolate or narrowly oblong-lanceolate blades.

2. *S. lanceolatum*.

1. *Steironema ciliatum* (L.) Raf. FRINGED LOOSESTRIFE. (Man. p. 717; I. F. f. 2816.) In moist thickets, N. S. to B. C., Ga., Ala., Kans. and Ariz.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LUZERNE; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

2. *Steironema lanceolatum* (Walt.) A. Gray. LANCE-LEAVED LOOSESTRIFE. (Man. p. 717; I. F. f. 2819.) In moist soil, Me. to Minn., Fla., La. and Ariz.—*Pennsylvania*: MONROE; BUCKS; BRISTOL; LANCASTER; PERRY; FRANKLIN; HUNTINGDON; CAMBRIA.

4. NAUMBURGIA Moench.

1. *Naumburgia thyrsiflora* (L.) Duby. TUFTED LOOSESTRIFE. (Man. p. 717; I. F. f. 2821.) In swamps, N. S. to Alaska, Pa., Mo. and Ore. Also in Eu. and Asia.—*Pennsylvania*: WAYNE; PIKE; TIOGA; ERIE.

5. TRIENTALIS L.

1. *Trientalis Americana* Pursh. STAR-FLOWER CHICKWEED. WINTERGREEN. (Man. p. 718; I. F. f. 2822.) In damp woods and thickets, Lab. to the N. W. Terr., Va., Ill. and Mich.—*Pennsylvania*: PIKE; MONROE; LEHIGH; NORTHAMPTON; BERKS; BUCKS; CHESTER; LANCASTER; LEBANON; SCHUYLKILL; FRANKLIN; HUNTINGDON; ARMSTRONG; CARBON; SOMERSET; ERIE.

6. ANAGALLIS L.

1. *Anagallis arvensis* L. RED OR SCARLET PIMPERNEL. (Man. p. 718; I. F. f. 2824.) In waste places, Newf. to Fla., Minn. and Mex., and on the Pacific Coast. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; LEBANON; FRANKLIN; ALLEGHENY.

7. DODECATHEON L.

1. *Dodecatheon Meadia* L. SHOOTING STAR. (Man. p. 719; I. F. f. 2826.) On moist cliffs and prairies, Pa. to Man., Ga. and Tex.—*Pennsylvania*: MONTGOMERY; LANCASTER; PERRY.

Order 3. EBENALES.

FAMILY I. EBENACEAE Vent. EBONY FAMILY.

1. DIOSPYROS L.

1. *Diospyros Virginiana* L. PERSIMMON. DATE-PLUM. (Man. p. 721; I. F. f. 2831.) In fields and woods, R. I. to Kans., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; SCHUYLKILL; FRANKLIN; HUNTINGDON; ALLEGHENY.

Order 4. GENTIANALES.

Stamens usually 2, fewer than the corolla-lobes or sepals, our representatives shrubs or trees. Fam. 1. OLEACEAE.

Stamens as many as the corolla-lobes: our representatives herbs.

Gynoecium of several united carpels: stigmas distinct: plants with a watery juice.

Ovary 2-celled: leaves with stipules, at least connected by a stipular line.

Fam. 2. LOGANIACEAE.

Ovary 1-celled: leaves without stipules.

Corolla with imbricated or convolute lobes in the bud: leaves opposite or whorled. Fam. 3. GENTIANACEAE.

Corolla with induplicate-valvate lobes in the bud: leaves alternate.

Fam. 4. MENYANTHACEAE.

Gynoecium of 2 distinct carpels except for the united styles or stigmas: plants with a milky juice.

Androecium of distinct stamens: pollen-grain simple: styles united.

Fam. 5. APOCYNACEAE.

Androecium of united stamens: pollen-grains in waxy masses: styles distinct.

Fam. 6. ASCLEPIADACEAE.

FAMILY I. OLEACEAE Lindl. OLIVE FAMILY.

Fruit dry, a capsule or a samara.

Flowers complete: fruit a capsule: leaf-blades simple. 1. SYRINGA.

Flowers without a corolla: fruit a samara: leaf-blades compound.

2. FRAXINUS.

Fruit fleshy, a drupe or a berry.

Corolla of nearly distinct petals: flowers in drooping panicles.

3. CHIONANTHUS.

Corolla of united petals: flowers in erect panicles.

4. LIGUSTRUM.

1. SYRINGA L.

1. *Syringa vulgaris* L. LILAC. (Man. p. 724; I. F. f. 2837.) Escaped, Me., N. H. to N. Y. and Pa. Nat. of eastern Eu.—*Pennsylvania*: NORTHAMPTON.

2. FRAXINUS L.

Leaves with stalked lateral leaflets: calyx present in the pistillate flowers: samara not winged all around.

Wings of the samara almost entirely terminal on the body.

- Leaves and twigs glabrous or essentially so. 1. *F. Americana*.
 Leaves and twigs pubescent. 2. *F. Biltmoreana*.
 Wings of the samara markedly decurrent on the sides of the body.
 Samara with a spatulate wing.
 Leaves, twigs and panicles glabrous or essentially so. 3. *F. lanceolata*.
 Leaves, twigs and panicles velvety-pubescent. 4. *F. Pennsylvanica*.
 Samara with a long-linear wing. 5. *F. Darlingtonii*.
 Leaves with sessile lateral leaflets: calyx wanting: samara winged all around. 6. *F. nigra*.

1. *Fraxinus Americana* L. WHITE ASH. (Man. p. 724; I. F. f. 2838.) In rich woods, N. S. to Minn., Fla., Kans. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; HUNTINGDON; FRANKLIN; CARBON; ALLEGHENY.

2. *Fraxinus Biltmoreana* Beadle. BILTMORE ASH. (Man. p. 725.) In woods, Pa. to Ga.—*Pennsylvania*: YORK, McCall's Ferry.

3. *Fraxinus lanceolata* Borck. GREEN ASH. (Man. p. 725; I. F. f. 2839.) Moist soil, Vt. to the N. W. Terr., Fla. and Ariz.—*Pennsylvania*: LANCASTER; YORK; PERRY; WESTMORELAND; ALLEGHENY.

4. *Fraxinus Pennsylvanica* Marsh. RED ASH. (Man. p. 725; I. F. f. 2840.) In moist soil, N. B. to S. Dak., Fla., Ala. and Kans.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN.

5. *Fraxinus Darlingtonii* Britton. DARLINGTON'S ASH. (Man. p. 725.) In woods, N. Y. to Pa.—*Pennsylvania*: CHESTER.

6. *Fraxinus nigra* Marsh. BLACK OR HOOP ASH. (Man. p. 725; I. F. f. 2843.) In swamps and wet woods, Newf. to Man., Va. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; FRANKLIN; HUNTINGDON; SUSQUEHANNA; ALLEGHENY.

3. CHIONANTHUS L.

1. *Chionanthus Virginica* L. FRINGE TREE. (Man. p. 726; I. F. f. 2845.) In moist thickets, Del. and southern Pa., to Fla. and Tex.—*Pennsylvania*: CHESTER; LANCASTER; YORK; BEAVER.

4. LIGUSTRUM L.

1. *Ligustrum vulgare* L. PRIVET. PRIM. (Man. p. 726; I. F. f. 2846.) Escaped, Me. and Ont. to Pa. to N. C. Native of Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN; DELAWARE; ALLEGHENY.

FAMILY 2. LOGANIACEAE Dumort. LOGANIA FAMILY.

1. POLYPREMUM L.

1. *Polypremum procumbens* L. POLYPREMUM. (Man. p. 728; I. F. 2850.) In dry, sandy soil, N. J. and Pa. to Fla., Ky., the Indian Terr. and Mex. Also in the W. Indies.—*Pennsylvania*: PHILADELPHIA, ballast.

FAMILY 3. **GENTIANACEAE** Dumort. GENTIAN FAMILY.

Corolla-lobes convolute in the bud : stem-leaves not scale-like.

Style elongated : anthers twisted or much curved at maturity.

Corolla salverform.

1. *ERYTHRAEA*.

Corolla rotate.

2. *SABBATIA*.

Style wanting or very short : anthers straight at maturity.

Corolla funnelform, club-shaped or campanulate, without glands, scales or nectariferous pits.

3. *GENTIANA*.

Corolla rotate, with 1 or 2 fringed glands at the base of each lobe.

4. *FRASERA*.

Corolla-lobes imbricated in the bud : stem-leaves mere scales.

Calyx of 2 sepals : corolla-lobes relatively short.

5. *OBOLARIA*.

Calyx of 4 sepals : corolla lobes relatively long.

6. *BARTONIA*.

1. ERYTHRAEA Neck.

Calyx $\frac{1}{2}$ or $\frac{1}{4}$ as long as the corolla : corolla-lobes 5-6 mm. long.

1. *E. Centaurium*.

Calyx about $\frac{1}{2}$ as long as the corolla : corolla-lobes 3-4 mm. long.

2. *E. pulchella*.

1. *Erythraea Centaurium* (L.) Pers. LESSER CENTAURY. BITTER-HERB. (Man. p. 729 ; I. F. f. 2852.) In waste places, N. S. and Quebec to Ill. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON, Nazareth.

2. *Erythraea pulchella* (Sw.) Fries. BRANCHING CENTAURY. (Man. p. 729 ; I. F. f. 2853.) In fields and waste places, N. Y. to Pa. and Md. Also in the W. Indies. Nat. from Eu.—*Pennsylvania* : CHESTER ; LANCASTER ; LEBANON ; PERRY.

2. SABBATIA Adans.

Leaf-blades broad, cordate-clasping : stems 4-angled, the branches opposite.

1. *S. angularis*.

Leaf-blades narrow, rarely sessile : stems terete or nearly so, the branches alternate.

2. *S. campanulata*.

1. *Sabbatia angularis* (L.) Pursh. BITTER-BLOOM. ROSE-PINK. (Man. p. 730 ; I. F. f. 2858.) In rich soil, N. Y. and Pa. to Ont., Mich., Fla., the Ind. Terr. and La.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; ALLEGHENY.

2. *Sabbatia campanulata* (L.) Torr. SLENDER MARSH PINK. (Man. p. 730 ; I. F. f. 2863.) In salt marshes and along brackish rivers, rarely in fresh-water swamps, eastern Mass. to Fla. and La. Also in Cuba.—*Pennsylvania* : BUCKS, Tullytown.

3. GENTIANA L.

Plants annual : corolla without teeth or plaits at the sinuses.

Corollas about 5 cm. long ; lobes fringed.

1. *G. crinita*.

Corollas about 1.5-2 cm. long ; lobes entire.

2. *G. quinquefolia*.

Plants perennial : corolla with toothed or lobed plaits at the sinuses.

A. Calyx-lobes and leaf-margins scabrous or ciliate.

Corolla-lobes as long as the plaits or larger.

3. *G. Saponaria*.

Corolla-lobes minute or obsolete, the plaits relatively large.

4. *G. Andrewsii*.

B. Calyx-lobes and leaf-margins smooth or essentially so.

Corolla-lobes ovate : leaf-blades mainly broadest below the middle : seeds winged.

Corolla-lobes twice as long as the plaits, acute : leaf-blades of a lanceolate type. 5. *G. flavida*.

Corolla-lobes scarcely longer than the plaits, obtuse : leaf-blades of a linear type. 6. *G. linearis*.

Corolla-tubes triangular-lanceolate : leaf-blades broadest above the middle : seeds not winged. 7. *G. villosa*.

1. *Gentiana crinita* Froel. FRINGED GENTIAN. (Man. p. 732 ; I. F. f. 2867.) In moist woods and meadows, Quebec to Minn., Ga. and Iowa.—*Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; BERKS ; HUNTINGDON ; CENTRE ; VENANGO ; ERIE ; ALLEGHENY.

2. *Gentiana quinquefolia* L. STIFF GENTIAN. AGUE-WEED. (Man. p. 732 ; I. F. f. 2871.) In dry or moist soil, Me. and Ont. to Mich., Fla. and Mo.—*Pennsylvania* : MONROE ; LUZERNE ; NORTHAMPTON ; BUCKS.

3. *Gentiana Saponaria* L. SOAPWORT GENTIAN. (Man. p. 733 ; I. F. f. 2875.) In wet soil, Ont. to Minn., Conn., Fla. and La.—*Pennsylvania* : DELAWARE, Tinicum ; CHESTER ; LANCASTER ; DAUPHIN, Cold Spring ; MONTGOMERY ; BUCKS ; YORK ; ERIE.

4. *Gentiana Andrewsii* Griseb. CLOSED GENTIAN. (Man. p. 733 I. F. f. 2876.) In moist soil, Quebec to the N. W. Terr., Ga. and Mo.—*Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; YORK ; LEBANON ; HUNTINGDON ; FRANKLIN ; ERIE, Presque Isle ; BEAVER ; ALLEGHENY.

5. *Gentiana flavida* A. Gray. YELLOWISH GENTIAN. (Man. p. 733 ; I. F. f. 2877.) In moist soil, Ont. to Va., Minn. and Ky.—*Pennsylvania* : BUCKS ; LEHIGH ; FULTON ; LYCOMING ; HUNTINGDON.

6. *Gentiana linearis* Froel. NARROW-LEAVED GENTIAN. (Man. p. 733 ; I. F. f. 2878.) In bogs and on mountains, N. B. and Ont. to Md.—*Pennsylvania* : MONROE.

7. *Gentiana villosa* L. STRIPED GENTIAN. (Man. p. 733 ; I. F. f. 2880.) In shaded places, N. J. and Pa. to Fla. and La.—*Pennsylvania* : CHESTER ; LANCASTER ; LEBANON ; BERKS.

4. FRASERA Walt.

1. *Fraseria Carolinensis* Walt. AMERICAN COLUMBO. (Man. p. 734 ; I. F. f. 2884.) In dry soil, western N. Y. and Ont. to Wis., Ga. and Ky.—*Pennsylvania* : VENANGO, east Sandy Creek.

5. OBOLARIA L.

1. *Obolaria Virginica* L. PENNYWORT. (Man. p. 735 ; I. F. f. 2886.) In rich woods and thickets, N. J. to Ga., Ill. and Tex.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; PHILADELPHIA ; CHESTER ; BERKS ; LEBANON ; LANCASTER ; BLAIR ; ALLEGHENY.

6. **BARTONIA** Muhl.

Corolla yellowish, 3-4 mm. long.

1. *B. Virginica*.

Corolla purplish, 4-5 mm. long.

2. *B. iodandra*.

1. **Bartonia Virginica** (L.) B.S.P. **YELLOW BARTONIA**. (Man. p. 735; I. F. f. 2887.) In moist soil, Newf. to Fla., Mich. and La.—*Pennsylvania*: LACKAWANNA; MONROE; SCHUYLKILL; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; CENTRE.

2. **Bartonia iodandra** Robinson. (Man. p. 735.) In sphagnum, Newf. to Pa. and N. J.—*Pennsylvania*. Specimens doubtfully referred here have been found in Northampton County.

FAMILY 4. **MENYANTHACEAE** G. Don. BUCKBEAN FAMILY.

Leaves with 3-foliolate blades: swamp plants.

1. **MENYANTHES**.

Leaves with simple blades: floating plants.

2. **LIMNANTHEMUM**.

1. **MENYANTHES** L.

1. **Menyanthes trifoliata** L. BUCKBEAN. MARSH TREFOIL. (Man. p. 736; I. F. f. 2889.) In bogs, Greenland to Alaska, L. I., Pa., Neb. and Calif. Also in Eu. and Asia.—*Pennsylvania*: SUSQUEHANNA; MONROE; TIOGA; BUCKS; LANCASTER; CENTRE; CRAWFORD; ERIE.

2. **LIMNANTHEMUM** S. G. Gmel.

1. **Limnanthemum lacunosum** (Vent.) Griseb. FLOATING HEART. (Man. p. 736; I. F. f. 2890.) In ponds, N. S. to Fla., Ont., Minn. and La.—*Pennsylvania*: BUCKS, Bristol; PIKE, Twelve Mile Pond and Silver Lake.

FAMILY 5. **APOCYNACEAE** Lindl. DOGBANE FAMILY.

Leaves alternate.

1. **AMSONIA**.

Leaves opposite.

Flowers axillary to leaf-like bracts.

2. **VINCA**.

Flowers in terminal cymes.

3. **APOCYNUM**.

1. **AMSONIA** Walt.

1. **Amsonia Amsonia** (L.) Britton. BROAD-LEAVED AMSONIA. (Man. p. 737.) In moist soil, Pa. to Mo., Ky., Fla. and Tex.—*Pennsylvania*: CHESTER, West Grove.

2. **VINCA** L.

1. **Vinca minor** L. PERIWINKLE. MYRTLE. (Man. p. 738; I. F. f. 2894.) Escaped, Ont. to N. Y., Conn., N. J. and Ga.—*Pennsylvania*: LANCASTER; ALLEGHENY.

3. **APOCYNUM** L.

Corolla 5-9 mm. long, the lobes recurved or spreading.

1. *A. androsaemifolium*.

Corolla 3-4.5 mm. long, the lobes erect or nearly so.

Corolla greenish white: leaf-blades 2-4 times as long as wide.

2. *A. cannabinum*.

Corolla white: leaf-blades 4-6 times as long as wide.

3. *A. album*.

1. *Apocynum androsaemifolium* L. SPREADING DOGBANE. (Man. p. 738; I. F. f. 2895.) In fields and thickets, Anticosti to B. C., Ga., Neb. and Ariz.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; BEDFORD; DAUPHIN; HUNTINGDON; ALLEGHENY.

2. *Apocynum cannabinum* L. INDIAN HEMP. (Man. p. 738; I. F. f. 2896.) In fields and thickets, Anticosti to B. C., Fla. and Lower Calif.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; BEDFORD; DAUPHIN; HUNTINGDON; ALLEGHENY.

3. *Apocynum album* Greene. (Man. p. 739.) On river shores, Me. and Ont. to Mo. and Va.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LANCASTER; YORK; ALLEGHENY.

FAMILY 6. **ASCLEPIADACEAE** Lindl. MILKWEED FAMILY.

Erect or decumbent herbs, not vines.

Hoods of the crown each with an incurved horn within. 1. ASCLEPIAS.

Hoods of the crown each with a crest-like keel, unappendaged.

2. ACERATES.

Twining vines.

Pollen in a single waxy mass in each anther-sac.

Pollen-masses pendulous: anthers appendaged by a scarious membrane.

3. CYNANCHUM.

Pollen-masses horizontal: anthers unappendaged.

4. VINCETOXICUM.

Pollen granulose, in 2 loosely aggregated masses in each anther-sac.

5. PERIPLOCA.

1. **ASCLEPIAS** L.

Corolla orange: leaves, or some of them, alternate.

Leaves mainly alternate: stems erect or ascending. 1. *A. tuberosa*.

Leaves, at least the upper ones, opposite: stems procumbent or reclining.

2. *A. decumbens*.

Corolla red, purple green or white: leaves opposite or whorled.

Corolla red or deep purple.

Corona-hoods 4-6 mm. high: corolla 2-4 mm. broad.

Corolla purplish red: hoods lanceolate.

3. *A. rubra*.

Corolla deep purple: hoods oblong.

4. *A. purpurascens*.

Corona-hoods 2-3 mm. high: corolla 4-6 mm. broad.

Plant glabrous or nearly so: leaf-blades lanceolate or oblong-lanceolate.

5. *A. incarnata*.

Plant densely pubescent: leaf-blades nearly oblong.

6. *A. pulchra*.

Corolla white, green, greenish purple or pink.

A. Leaf-blades relatively broad.

a. Plants glabrous.

Leaf-blades cordate-clasping, undulate-crisped. 7. *A. amplexicaulis*.

Leaf-blades manifestly petioled or with petiole-like bases.

Leaves opposite: corolla white or greenish.

Umbel lax, the pedicels drooping: corolla greenish.

8. *A. exaltata*.

Umbel dense, the pedicels radiating: corolla white.

9. *A. variegata*.

Leaves in 1 or 2 whorls of 4's: corolla pink. 10. *A. quadrifolia*.

b. Plants more or less pubescent, the lower surface of the leaves, at least, copiously pubescent. 11. *A. Syriaca*.

B. Leaf-blades linear. 12. *A. verticillata*.

1. *Asclepias tuberosa* L. BUTTERFLY-WEED. PLEURISY-ROOT. (Man. p. 741; I. F. f. 2900.) In dry fields, Me. and Ont. to Minn., Fla., Tex. and Ariz.—*Pennsylvania* NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Asclepias decumbens* L. DECUMBENT BUTTERFLY-WEED. (Man. p. 741; I. F. f. 2901.) In dry fields, Conn. to Ill., N. C. and Fla.—*Pennsylvania*: NORTHAMPTON; LANCASTER; FRANKLIN.

3. *Asclepias rubra* L. RED MILKWEED. (Man. p. 742; I. F. f. 2903.) Moist soil, N. J. and Pa. to Fla., La. and Tex.—*Pennsylvania*: BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER.

4. *Asclepias purpurascens* L. PURPLE MILKWEED. (Man. p. 742; I. F. f. 2904.) In dry fields and thickets, Mass. to Va., Ont., Minn. and Kans.—*Pennsylvania*: MONROE; BUCKS; DELAWARE; CHESTER; FRANKLIN; HUNTINGDON.

5. *Asclepias incarnata* L. SWAMP MILKWEED. (Man. p. 742; I. F. f. 2905.) In swamps, N. B. to the N. W. Terr., Tenn., La. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; FRANKLIN; HUNTINGDON; LEBANON; ERIE; ALLEGHENY.

6. *Asclepias pulchra* Ehrh. HAIRY MILKWEED. (Man. p. 742; I. F. f. 2906.) In moist fields and swamps, Me. to Minn. and Ga.—*Pennsylvania*: NORTHAMPTON; LANCASTER; CHESTER.

7. *Asclepias amplexicaulis* J. E. Smith. (Man. p. 742; I. F. f. 2909.) In dry fields, mostly in sandy soil, Me. to Fla., Minn., Kans. and Tex.—*Pennsylvania*: MONROE; LUZERNE; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; FULTON; HUNTINGDON.

8. *Asclepias exaltata* (L.) Muhl. POKE OR TALL MILKWEED. (Man. p. 743; I. F. f. 2911.) In thickets and woods, Me. to Minn., Ga. and Mo.—*Pennsylvania*: MONROE; LACKAWANNA; LUZERNE; BUCKS; DELAWARE; CHESTER; LANCASTER; SUSQUEHANNA; FULTON; ALLEGHENY.

9. *Asclepias variegata* L. WHITE MILKWEED. (Man. p. 743; I. F. f. 2912.) In dry woods and thickets, Conn. to Ill., Fla., Ark. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; HUNTINGDON.

10. *Asclepias quadrifolia* Jacq. FOUR-LEAVED MILKWEED. (Man. p. 743; I. F. f. 2913.) Woods and thickets, Me. and Ont. to Minn., N. C. and Ark.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; MONTGOMERY; FRANKLIN; SOMERSET; ALLEGHENY.

11. *Asclepias Syriaca* L. COMMON MILKWEED. SILKWEED. (Man. p. 743; I. F. f. 2914.) In fields and waste places, N. B. to the N. W.

Terr., N. C. and Kans.—*Pennsylvania*: PIKE; LACKAWANNA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; ERIE; ALLEGHENY.

12. *Asclepias verticillata* L. WHORLED MILKWEED. (Man. p. 744; I. F. f. 2920.) Dry fields and hills, Me. and Ont. to the N. W. Terr., Fla., Mex. and N. Mex.—*Pennsylvania*: LUZERNE; NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; CLARION; ARMSTRONG.

2. ACERATES Ell.

1. *Acerates viridiflora* (Raf.) Eaton. GREEN MILKWEED. (Man. p. 746; I. F. f. 2924.) In dry, sandy or rocky soil, Mass. to Ont., N. W. Terr., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; FRANKLIN; WESTMORELAND; HUNTINGDON; ALLEGHENY; MONTGOMERY.

3. CYNANCHUM L.

1. *Cynanchum nigrum* (L.) Pers. BLACK SWALLOW-WORT. (Man. p. 747; I. F. f. 2930.) In waste places, escaped, Mass. to Pa. and Ohio.—*Pennsylvania*: PHILADELPHIA, Bartram's Garden; DELAWARE.

4. VINCETOXICUM Walt.

1. *Vincetoxicum obliquum* (Jacq.) Britton. LARGE-FLOWERED VINCETOXICUM. (Man. p. 748; I. F. f. 2934.) In thickets, Pa. to Ohio, Va. and Ky.—*Pennsylvania*: PHILADELPHIA; DELAWARE; CHESTER; MONTGOMERY; LANCASTER; FRANKLIN.

5. PERIPLOCA L.

1. *Periploca Graeca* L. (Man. p. 1050.) Nat. of Syria and the Grecian Islands. Adv. or nat. in N. Am.—*Pennsylvania*: PHILADELPHIA.

Order 5. POLEMONIALES.

A. Stamens 5.

a. Fruit capsular or baccate: ovary not 4-lobed.

Styles or stigmas distinct.

Ovary 1-2-celled, or rarely 4-celled: stigmas 2.

Ovary 2-celled or 4-celled.

Corolla unappendaged within: plants with typical leaves.

Fam. 1. CONVULVULACEAE.

Corolla appendaged within: parasitic twining plants with scale-like leaves.

Fam. 2. CUSCUTACEAE.

Ovary 1-celled.

Fam. 3. HYDROPHYLLACEAE.

Ovary 3-celled: stigmas 3.

Calyx-lobes imbricated: corolla mostly plaited in the bud.

Fam. 1. CONVULVULACEAE.

Calyx-lobes valvate: corolla merely convolute in the bud.

Fam. 4. POLEMONIACEAE.

Styles or stigmas wholly united.

Median axis of the gynoecium in the same axis as the stem: seeds mostly pitted.

Fam. 9. SOLANACEAE.

Median axis of the gynoecium not in the same axis as the stem: seeds mostly tuberculate.

Fam. 10. SCROPHULARIACEAE.

- b. Fruit drupaceous, or of 2 or 4 nutlets. Fam. 5. BORRAGINACEAE.
 B. Stamens 4 and didynamous, or 1 or 2.
 Carpels ripening into a group of 4 nutlets, an achene or a drupe.
 Style apical on the lobeless ovary.
 Ovary 2-several-celled. Fam. 6. VERBENACEAE.
 Ovary 1-celled. Fam. 7. PHRYMACEAE.
 Style arising between the lobes of the ovary. Fam. 8. LABIATEAE.
 Carpels ripening into a capsule.
 Placentae of the ovary axile.
 Ovary 2-celled, or rarely 3-5-celled.
 Corolla-lobes imbricated: capsule not elastically dehiscent.
 Fam. 10. SCROPHULARIACEAE.
 Corolla-lobes convolute: capsule elastically dehiscent.
 Fam. 15. ACANTHACEAE.
 Ovary 1-celled. Fam. 11. LENTIBULARIACEAE.
 Placentae of the ovary parietal.
 Herbs parasitic on the roots of other plants: leaves scale-like: foliage not green. Fam. 12. OROBANCHACEAE.
 Trees, shrubs or woody vines, or herbs, but not parasitic: leaves not scale-like: foliage green.
 Ovary and capsule 2-celled: trees, shrubs or woody vines: seeds winged. Fam. 13. BIGNONIACEAE.
 Ovary and capsule 1-celled: herbs: seeds wingless. Fam. 14. MARTYNIACEAE.

FAMILY I. **CONVOLVULACEAE** Vent. MORNING-GLORY FAMILY.

Stigma or stigmas capitate.

Corolla salverform: stamens and style exserted. 1. *QUAMOCLIT*.

Corolla campanulate or funnelform: stamens and style included.

2. *IPOMAEA*.

Stigmas elongated.

3. *CONVOLVULUS*.

1. **QUAMOCLIT** Moench.

Leaf-blades pinnately parted into narrow segments.

1. *Q. Quamoclit*.

Leaf-blades entire or merely angulately lobed.

2. *Q. coccinea*.

1. **Quamoclit Quamoclit** (L.) Britton. CYPRESS VINE. INDIAN PINK. (Man. p. 751; I. F. f. 2943.) In waste and cult. ground, Va. to Fla., Ohio, Kans. and Tex. Adventive farther north. Nat. from tropical Am. —*Pennsylvania*: BUCKS.

2. **Quamoclit coccinea** (L.) Moench. SMALL RED MORNING-GLORY. (Man. p. 751; I. F. f. 2944.) Along river-banks in waste places, Pa. to Fla., Ohio, Kans., Tex. and Ariz. Nat. from tropical Am., or native in the Southwest. —*Pennsylvania*: NORTHAMPTON; LANCASTER; PHILADELPHIA.

2. **IPOMOEA** L.

Ovary 2-celled or rarely 4-celled: stigma entire or 2-lobed.

Perennial from an immense root: corolla 5-8 cm. long.

1. *I. pandurata*.

Annual with fibrous roots: corolla 1-2 cm. long.

2. *I. lacunosa*.

Ovary 3-celled: stigmas 3.

Corollas over 4.5 cm. long: leaf-blades entire.

3. *I. purpurea*.

Corolla less than 4.5 cm. long: leaf-blades 3-lobed.

4. *I. hederacea*.

1. *Ipomoea pandurata* (L.) Meyer. WILD POTATO VINE. (Man. p. 752; I. F. f. 2945.) In dry soil, Ont. to Conn., Fla. Mich., Kans. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; BEDFORD; HUNTINGDON; ALLEGHENY.

2. *Ipomoea lacunosa* L. SMALL-FLOWERED WHITE MORNING-GLORY. (Man. p. 752; I. F. f. 2946.) In moist soil, Pa. to S. C., Ill., Kans. and Tex.—*Pennsylvania*: LANCASTER, on the Susquehanna.

3. *Ipomoea purpurea* (L.) Roth. MORNING-GLORY. (Man. p. 752; I. F. f. 2949.) In waste places, escaped, N. S. to Fla., Ont. Neb. and Tex. Adv. or nat. from tropical Am.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

4. *Ipomoea hederacea* Jacq. IVY-LEAVED MORNING-GLORY. (Man. p. 752; I. F. f. 2950.) In fields and waste places, L. I. to Fla., Pa., S. Dak., Neb. and Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; ALLEGHENY.

3. CONVOLVULVUS L.*

Calyx enclosed in 2 large bracts.

Plants erect or ascending: bracts cordate.

1. *C. spithameus*.

Plants climbing: bracts not cordate.

2. *C. sepium*.

Calyx not accompanied by bracts.

3. *C. arvensis*.

1. *Convolvulus spithameus* UPRIGHT BINDWEED. (Man. p. 753; I. F. f. 2953.) In dry sandy or rocky fields or on banks, N. S. to the Northwest Terr., Fla. and Ky.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Convolvulus sepium* L. HEDGE OR GREAT BINDWEED. (Man. p. 753; I. F. f. 2951.) In fields and thickets, usually in moist soil, N. S. to N. C., Mont., Utah and Kans. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

3. *Convolvulus arvensis* L. SMALL BINDWEED. (Man. p. 753; I. F. f. 2954.) In fields and waste places, N. S. to Ont., N. J., Neb. and Kans. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN.

FAMILY 2. CUSCUTACEAE Dumort. DODDER FAMILY.

1. CUSCUTA L.

Scales within the corolla merely crenulate: stigmas slender: capsule circumscissile.

Scales crenulate near the apex, not incurved.

1. *C. Epilinum*.

Scales crenulate all around, incurved.

2. *C. Epithymum*.

Scales within the corolla fringed: stigmas capitate: capsule utricle-like.

A. Sepals partially united.

* *Convolvulus Japonicus* Thunb. (Man. p. 753.) Escaped from N. H. to D. C. and Md.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; COLUMBIA; ALLEGHENY.

Flowers sessile or essentially so : corolla persistent around the base of the fruit.

Calyx-lobes obtuse : corolla-scales ovate, fringed. 3. *C. arvensis*.

Calyx-lobes acutish : corolla-scales obsolete or of several processes.

4. *C. Polygonorum*.

Flowers markedly pedicelled : corolla surrounding or capping the fruit or deciduous.

Capsule depressed : corolla-scales fringed all around.

5. *C. Cephalanthi*.

Capsule not depressed : corolla-scales fringed mainly near the apex.

6. *C. Gronovii*.

B. Sepals distinct, accompanied by nearly similar bracts. 7. *C. compacta*.

1. *Cuscuta Epilinum* Weihe. FLAX DODDER. (Man. p. 754; I. F. f. 2956.) On flax, N. S. to N. J. and Pa. Introd. from Eu.—*Pennsylvania* : BUCKS; CHESTER; LANCASTER.

2. *Cuscuta Epithymum* Murr. CLOVER DODDER. (Man. p. 755; I. F. f. 2957.) Usually on clover, Me. and Ont. to Conn., N. Y., Pa. and S. Dak. Introd. from Eu.—*Pennsylvania* : NORTHAMPTON; SUSQUEHANNA.

3. *Cuscuta arvensis* Beyrich. FIELD DODDER. (Man. p. 755; I. F. f. 2958.) On various herbs and low shrubs, Mass. to the N. W. Terr., Fla., Tex., Mex. and Calif.—*Pennsylvania* : BUCKS; LANCASTER.

4. *Cuscuta Polygonorum* Engelm. SMART-WEED DODDER. (Man. p. 755; I. F. f. 2959.) On *Polygonum* and other herbs, Minn. and Wis. to Neb. and Ark. Also in Pa. and Del.—*Pennsylvania* : LUZERNE; LANCASTER; DAUPHIN; HUNTINGDON.

5. *Cuscuta Cephalanthi* Engelm. BUTTON-BUSH DODDER. (Man. p. 755; I. F. f. 2962.) On shrubs and tall herbs, Pa. to Minn., the N. W. Terr., Tex. and Ariz.—*Pennsylvania* : NORTHAMPTON; LANCASTER; DAUPHIN.

6. *Cuscuta Gronovii* Willd. GRONOVII'S DODDER. LOVE-VINE. (Man. p. 755; I. F. f. 2963.) On herbs and low shrubs, N. S. to Man., Fla. and Tex.—*Pennsylvania* : NORTHAMPTON; BUCKS; CHESTER; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; ERIE.

7. *Cuscuta compacta* Juss. COMPACT DODDER. (Man. p. 756; I. F. f. 2966.) On shrubs, Ont. to N. Y., Ala., Kans. and Tex.—*Pennsylvania* : BUCKS, Nockamixon; DELAWARE, Tinicum.

FAMILY 3. **HYDROPHYLLACEAE** Lindl. WATER-LEAF FAMILY.
Corolla-lobes convolute in the bud : ovary with well dilated placentae.

Calyx not accrescent : stamens exserted.

1. **HYDROPHYLLUM**.

Calyx accrescent : stamens included.

2. **MACROCALYX**.

Corolla-lobes imbricated in the bud : ovary with very narrow placentae.

3. **PHACELIA**.

1. **HYDROPHYLLUM** L.

Leaf-blades pinnatifid or pinnately lobed.

Calyx unappendaged : lobes linear.

1. *H. Virginicum*.

Calyx with reflexed appendages at each sinus ; lobes lanceolate.

2. *H. appendiculatum*.

Leaf-blades palmately lobed.

3. *H. Canadense*.

1. **Hydrophyllum Virginicum** L. VIRGINIA WATER-LEAF. (Man. p. 763; I. F. f. 2996.) In woods, Quebec to Alaska, south to S. C., Kans. and Wash.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; SOMERSET; ALLEGHENY; ERIE.

2. **Hydrophyllum appendiculatum** Michx. APPENDAGED WATER-LEAF. (Man. p. 763; I. F. f. 2998.) In woods, Ont. to N. C., Minn. and Kans.—*Pennsylvania*: LANCASTER; ALLEGHENY.

3. **Hydrophyllum Canadense** L. BROAD-LEAVED WATER-LEAF. (Man. p. 763; I. F. f. 2999.) In woods, Mass. to N. C., Ill. and Ky.—*Pennsylvania*: BUCKS, Nockamixon; LANCASTER; SULLIVAN; ALLEGHENY.

2. MACROCALYX Trew.

1. **Macrocalyx Nyctelea** (L.) Kuntze. NYCTELEA. (Man. p. 764; I. F. f. 3001.) In moist soil, N. J. to Minn., the N. W. Terr., Va., Neb. and Kans.—*Pennsylvania*: BUCKS; PHILADELPHIA; LANCASTER; YORK.

3. PHACELIA Juss.

Corolla with entire or merely crenulate lobes.

1. *P. dubia*.

Corolla with fimbriate lobes.

2. *P. Purshii*.

1. **Phacelia dubia** (L.) Small. SMALL-FLOWERED PHACELIA. (Man. p. 765; I. F. f. 3006.) In moist soil, Pa. to Ga., Kans. and Tex.—*Pennsylvania*: LANCASTER; PERRY.

2. **Phacelia Purshii** Buckl. PURSH'S PHACELIA. (Man. p. 765; I. F. f. 3009.) In moist woods or thickets, Pa. to Minn., N. C., Ala. and Mo.—*Pennsylvania*: YORK; LANCASTER; FAYETTE; WASHINGTON; ALLEGHENY.

FAMILY 4. POLEMONIACEAE DC. PHLOX FAMILY.

Capsule rupturing the normally distended calyx: leaves opposite.

1. PHLOX.

Capsule loosely enclosed in the calyx: leaves alternate.

2. POLEMONIUM.

1. PHLOX L.

Leaves with dilated blades, sometimes narrow but not subulate.

Plants without prostrate and creeping sterile shoots.

Calyx-lobes shorter than the tube.

Calyx-lobes bristle-like, or bristle-tipped.

1. *P. paniculata*.

Calyx-lobes lanceolate to nearly triangular.

Calyx-lobes less than $\frac{1}{3}$ as long as the tube.

2. *P. maculata*.

Calyx-lobes $\frac{1}{3}$ or $\frac{1}{2}$ as long as the tube.

3. *P. ovata*.

Calyx-lobes longer than the tube.

4. *P. pilosa*.

Plants with prostrate or creeping sterile shoots.

Leaf-blades of the sterile shoots of an elliptic or oblong type, sessile.

5. *P. divaricata*.

Leaf-blades of the sterile shoots of a spatulate type, petioled.

6. *P. reptans*.

Leaves with subulate rigid blades.

7. *P. subulata*.

1. *Phlox paniculata* L. GARDEN PHLOX. (Man. p. 757; I. F. f. 2968.) In woods and thickets, Pa. to Fla., Ill., Kans. and La.—*Pennsylvania*: LUZERNE; DAUPHIN; LANCASTER; NORTHAMPTON; HUNTINGDON; FRANKLIN; GREENE; ALLEGHENY.

2. *Phlox maculata* L. WILD SWEET-WILLIAM. (Man. p. 757; I. F. f. 2969.) In moist woods and along streams, N. J. to Fla., Minn. and Tenn.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; BLAIR; BEDFORD.

3. *Phlox ovata* L. MOUNTAIN PHLOX. (Man. p. 758; I. F. f. 2970.) In woods, Pa. to N. C. and Ala.—*Pennsylvania*: HUNTINGDON, Barrens.

4. *Phlox pilosa* L. DOWNY PHLOX. (Man. p. 758; I. F. f. 2972.) In dry soil, Ont. to Man., N. J., Fla., Kans., Ark. and Tenn.—*Pennsylvania*: NORTHAMPTON; LEHIGH; BUCKS; DELAWARE; CHESTER; LANCASTER.

5. *Phlox divaricata* L. WILD BLUE PHLOX. (Man. p. 758; I. F. f. 2974.) In moist woods, Ont. to Minn., Pa., Fla., Kans., La. and Ark.—*Pennsylvania*: CHESTER; YORK; LANCASTER; DAUPHIN; BLAIR; CLEARFIELD; VENANGO; ALLEGHENY; ERIE.

6. *Phlox reptans* Michx. CRAWLING PHLOX. (Man. p. 758; I. F. f. 2975.) In woods, Pa. to Ga. and Ky.—*Pennsylvania*: HUNTINGDON; BLAIR; CLEARFIELD; FAYETTE; SOMERSET.

7. *Phlox subulata* L. GROUND OR MOSS PINK. (Man. p. 759; I. F. f. 2979.) In dry sandy or rocky soil, N. Y. to Fla., Mich. and Ky.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; CUMBERLAND; BERKS; COLUMBIA; CENTRE; HUNTINGDON; ALLEGHENY.

2. *POLEMONIUM* L.

Corolla over 15 mm. broad: anthers exserted: stems reclining.

1. *P. Van-Bruntiae*.

Corolla less than 15 mm. broad: anthers included: stems erect.

2. *P. reptans*.

1. *Polemonium Van Bruntiae* Britton. AMERICAN JACOB'S LADDER. (Man. p. 761; I. F. f. 2992.) In swamps and along streams, Vt. and northern N. Y. to Md.—*Pennsylvania*: SULLIVAN; SOMERSET; SUSQUEHANNA.

2. *Polemonium reptans* L. GREEK VALERIAN. (Man. p. 761; I. F. f. 2993.) Woods, N. Y. to Minn., Ga. and Kans.—*Pennsylvania*: BUCKS; CHESTER; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; CLEARFIELD; CAMBRIA; ERIE.

FAMILY 5. BORRAGINACEAE Lindl. BORAGE FAMILY.

Ovary entire or merely 2-4-grooved, surmounted by the style.

1. *HELIOTROPIMUM*.

Ovary of 4 distinct or partially united carpels, the style arising from the center.

A. Corolla regular.

Nutlets armed with barbed prickles.

Nutlets spreading, covered with prickles.

2. *CYNOGLOSSUM*.

Nutlets erect or incurved, with prickles in the back or sides.

3. *LAPPULA*.

Nutlets unarmed.

Nutlets attached laterally to the receptacle.

Mature calyx not markedly enlarged or membranous.

4. *MERTENSIA*.

Mature calyx much enlarged, membranous, veiny.

5. *ASPERUGO*.

Nutlets attached to the receptacle by their bases.

Nutlet with a small flat scar where attached.

Corolla funnellform or salverform; lobes obtuse, spreading.

Racemes without bracts.

6. *MYOSOTIS*.

Racemes with bracts.

7. *LITHOSPERMUM*.

Corolla tubular; lobes acute, erect.

8. *ONOSMODIUM*.

Nutlet with a large hollow scar where attached.

Corolla tubular.

9. *SYMPHYTUM*.

Corolla rotate.

10. *BORAGO*.

B. Corolla irregular.

Stamens included: corolla throat closed with scales.

11. *LYCOPSIS*.

Stamens exerted: corolla-throat dilated and open.

12. *ECHIUM*.

1. *HELIOTROPIUM* L.

Fruit 4-lobed, each lobe separating as a 1-seeded nutlet.

Leaf-blades of an oval type: foliage puberulent: calyx hairy.

1. *H. Europaeum*.

Leaf-blades of a linear or spatulate type: foliage glabrous: calyx glabrous.

2. *H. Curassavicum*.

Fruit 2-lobed or of 2 carpels.

3. *H. Indicum*.

1. *Heliotropium Europaeum* L. EUROPEAN HELIOTROPE. (Man. p. 767; I. F. f. 3014.) In waste places, N. Y. and Pa. to Fla.—*Pennsylvania*: PHILADELPHIA, on and about ballast.

2. *Heliotropium Curassavicum* L. SEA-SIDE HELIOTROPE. (Man. p. 767; I. F. f. 3015.) In dry, saline soil, Man. and the N. W. Terr. to Neb. and Tex. On the Pacific Coast from Ore. to Mex. In ballast about the northern seaports.—*Pennsylvania*: PHILADELPHIA, ballast; BUCKS.

3. *Heliotropium Indicum* L. INDIAN HELIOTROPE. (Man. p. 768; I. F. f. 3018.) In waste places, N. C. to Ill., Fla., and Tex. Nat. from India. Ballast about the northern seaports.—*Pennsylvania*: PHILADELPHIA, ballast; BUCKS.

2. *CYNOGLOSSUM* L.

Plants biennial, softly pubescent: stem copiously leafy to the top: nutlets flat: naturalized species.

1. *C. officinale*.

Plants perennial, hirsute: stem terminated by a long peduncle: nutlets convex: native species.

2. *C. Virginicum*.

1. *Cynoglossum officinale* L. HOUND'S-TONGUE. (Man. p. 768; I. F. f. 3019.) In fields and waste places, Quebec and Ont. to Minn., Man., N. C. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; ALLEGHENY.

2. *Cynoglossum Virginicum* L. WILD COMFREY. (Man. p. 768; I. F. f. 3020.) In woods, N. B. to western Ont., Fla., La. and Kans.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; ERIE; ALLEGHENY.

3. LAPPULA Moench.

Fruit erect: upper leaves with linear blades: pedicels subtended by narrow bracts.

1. *L. Lappula*.

Fruit drooping: upper leaves with dilated blades: pedicels bractless.

2. *L. Virginiana*.

1. *Lappula Lappula* (L.) Karst. EUROPEAN STICKSEED. BURSEED. (Man. p. 769; I. F. f. 3021.) In waste places, N. S. to B. C., N. J. and Kans. Nat. from Eu.—*Pennsylvania*: PHILADELPHIA, ballast; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Lappula Virginiana* (L.) Greene. VIRGINIA STICKSEED. (Man. p. 769; I. F. f. 3023.) In dry woods and thickets, N. B. to Ont. and Minn., Ala., La. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

4. MERTENSIA Roth.

1. *Mertensia Virginica* (L.) DC. VIRGINIA COWSLIP. (Man. p. 771; I. F. f. 3034.) In low meadows and along streams, Ont. to N. J., S. C, Minn., Neb. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

5. ASPERUGO L.

1. *Asperugo procumbens* L. GERMAN MADWORT. CATCHWEED. (Man. p. 772; I. F. f. 3037.) In waste places and ballast, N. Y. to D. C. and Minn. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA.

6. MYOSOTIS L.

Calyx pubescent with straight hairs: plants perennial.

Corolla mostly over 6 mm. broad: calyx-lobes shorter than the tube.

1. *M. palustris*.

Corolla mostly less than 6 mm. broad: calyx-lobes as long as the tube.

2. *M. laxa*.

Calyx pubescent with hooked hairs: plants annual or biennial.

Pedical longer than the calyx at maturity.

3. *M. arvensis*.

Pedical not longer than the calyx at maturity.

Calyx-lobes equal: corolla yellow, becoming blue or violet.

4. *M. versicolor*.

Calyx-lobes unequal: corolla white.

5. *M. Virginica*.

1. *Myosotis palustris* (L.) Lam. FORGET-ME-NOT. (Man. p. 772; I. F. f. 3038.) In brooks and marshes, N. S. to N. Y. and Tenn. Escaped. Nat. of Eu. and Asia.—*Pennsylvania*: MONROE; PHILADELPHIA.

2. *Myosotis laxa* Lehm. SMALLER FORGET-ME-NOT. (Man. p. 772; I. F. f. 3039.) In wet muddy places, Newf. to Ont., Va. and Tenn. Also in Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELA-

WARE; CHESTER; MONTGOMERY; LANCASTER; LEBANON; DAUPHIN; FRANKLIN; HUNTINGDON; SUSQUEHANNA; SOMERSET; ALLEGHENY.

3. *Myosotis arvensis* (L.) Lam. FIELD SCORPION-GRASS OR MOUSE-EAR. (Man. p. 772; I. F. f. 3040.) In fields, N. B. to Ont. and Minn., south to W. Va. Also in Eu.—*Pennsylvania*: NORTHAMPTON; FRANKLIN; LANCASTER.

4. *Myosotis versicolor* (Pers.) Reichenb. YELLOW OR BLUE SCORPION-GRASS. (Man. p. 773; I. F. f. 3041.) In fields and along roadsides, southern N. Y. to Del. Nat. of Eu.—*Pennsylvania*: DELAWARE, TINCUM.

5. *Myosotis Virginica* (L.) B.S.P. SPRING SCORPION-GRASS. (Man. p. 773; I. F. f. 3042.) On dry hills and banks, Me. to Ont., Minn., Ga. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; LANCASTER; FRANKLIN; ALLEGHENY.

7. LITHOSPERMUM L.

Corolla white or rarely yellow-tinged: calyx as long as the corolla-tube or longer: flowers separated.

Annuals or biennials: nutlets brown, wrinkled and pitted. 1. *L. arvense*.

Perennials: nutlets white, smooth and shining.

Leaf-blades of a lanceolate type.

2. *L. officinale*.

Leaf-blades of an ovate or oval type.

3. *L. latifolium*.

Corolla decidedly yellow: calyx shorter than the corolla-tube.

Corolla-tube bearded at the base within.

4. *L. Gmelini*.

Corolla-tube not bearded at the base.

5. *L. canescens*.

1. *Lithospermum arvense* L. CORN GROMWELL. (Man. p. 773; I. F. f. 3043.) In waste places and fields, Quebec to Mich., Ga. and Kans. Nat. from Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

2. *Lithospermum officinale* L. GROMWELL. (Man. p. 774; I. F. f. 3044.) In fields and waste places, Ont. to N. Y., west to Minn. Nat. from Eu.—*Pennsylvania*: SUSQUEHANNA.

3. *Lithospermum latifolium* Michx. AMERICAN GROMWELL. (Man. p. 774; I. F. f. 3045.) In dry fields and thickets, Ont. and western N. Y. to Minn., Va., Kans. and Ark.—*Pennsylvania*: BERKS; LANCASTER; FRANKLIN; HUNTINGDON; FAYETTE; ALLEGHENY.

4. *Lithospermum Gmelini* (Michx.) A. S. Hitchcock. HAIRY PUCCOON. (Man. p. 774; I. F. f. 3047.) In dry woods, N. Y. to Fla., Minn., Mont., Colo. and N. Mex.—*Pennsylvania*: ERIE, Presque Isle.

5. *Lithospermum canescens* (Michx.) Lehm. HOARY PUCCOON. (Man. p. 774; I. F. f. 3048.) In dry soil, Ont. to N. J., Ala., the N. W. Terr., Kans. and Ariz.—*Pennsylvania*: NORTHAMPTON; CHESTER; LANCASTER; LEBANON; HUNTINGDON; CENTRE.

8. ONOSMODIUM Michx.

Stems pubescent with spreading hairs : corolla-lobes triangular-ovate.

1. *O. Carolinianum*.

Stems pubescent with appressed hairs : corolla-lobes linear-lanceolate.

2. *O. Virginianum*.

1. Onosmodium Carolinianum (Lam.) DC. SHAGGY FALSE GROMWELL. (Man. p. 775; I. F. f. 3050.) In dry fields, thickets, or on banks, Ont. and western N. Y. to Minn., Kans., south to Ga. and Tex.—*Pennsylvania*: FRANKLIN; HUNTINGDON; WASHINGTON.

2. Onosmodium Virginianum (L.) DC. VIRGINIA FALSE GROMWELL. (Man. p. 775; I. F. f. 3052.) In thickets or on hillsides, N. Eng. to Fla., Kans. and Tex.—*Pennsylvania*: LANCASTER; BUCKS; DELAWARE; CHESTER.

9. SYMPHYTUM L.

1. Symphytum officinale L. COMFREY. (Man. p. 775; I. F. f. 3053.) In waste places, Newf. to Minn., south to Md. Nat. or adv. from Eu.—*Pennsylvania*: NORTHAMPTON; MONROE; BUCKS; DELAWARE; LANCASTER.

10. BORAGO L.

1. Borago officinalis L. BORAGE. (Man. p. 776; I. F. f. 3054.)—In waste places, escaped, N. S. to Ont. and Pa.—*Pennsylvania*: LANCASTER; COLUMBIA.

11. LYCOPSIS L.

1. Lycopsis arvensis L. SMALL BUGLOSS. (Man. p. 776; I. F. f. 3055.) In fields and waste places, N. S. to Ont., Pa. and Va. Nat. or adv. from Eu.—*Pennsylvania*: PHILADELPHIA, on and about ballast.

12. ECHIU M L.

1. Echium vulgare L. VIPER'S BUGLOSS. BLUEWEED. (Man. p. 776; I. F. f. 3056.) In fields and waste places, N. B. to Va., Ont. and Neb. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; YORK; BERKS; LEBANON; HUNTINGDON; SOMERSET; ALLEGHENY.

FAMILY 6. **VERBENACEAE** J. St. Hil. Vervain Family.

Corolla essentially regular, 5-lobed : fruit of 4 nutlets.

1. VERBENA.

Corolla 2-lipped, 4-lobed : fruit of 2 nutlets.

2. LIPPIA.

1. VERBENA L.

Spikes slender : bracts shorter than the flowers.

Spikes nearly filiform : corolla white or pale blue : fruits remote.

Leaf-blades pinnatifid or deeply incised : fruit barely 2 mm. long.

1. *V. officinalis*.

Leaf-blades merely serrate : fruit fully 2 mm. long.

2. *V. urticifolia*.

Spikes not filiform : corolla deep blue : fruits contiguous and imbricated.

Corolla 4-6 mm. long : plants glabrous or sparingly pubescent.

Leaf-blades of a lanceolate type, petioled.

3. *V. hastata*.

Leaf-blades of a spatulate or linear type, sessile.

4. *V. angustifolia*.

Corolla 8-10 mm. long : plants closed with a soft pubescence.

5. *V. stricta*.

Spikes dense and thick : bracts longer than the flowers.

6. *V. bracteosa*.

1. *Verbena officinalis* L. EUROPEAN VERVAIN. (Man. p. 777; I. F. f. 3057.) In waste and cult. ground, Me. to Fla. and Tex. Also on the Pacific Coast. Nat. from the Old World.—*Pennsylvania*: PHILADELPHIA; LANCASTER; DAUPHIN.

2. *Verbena urticifolia* L. WHITE VERVAIN. (Man. p. 777; I. F. f. 3058.) In fields and waste places, N. B. to S. Dak., Kans., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; COLUMBIA; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

3. *Verbena hastata* L. BLUE VERVAIN. (Man. p. 778; I. F. f. 3059.) In moist fields and in waste places, N. S. to B. C., Fla., Neb. and N. Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; COLUMBIA; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

4. *Verbena angustifolia* Michx. NARROW-LEAVED VERVAIN. (Man. p. 778; I. F. f. 3060.) In dry fields, Mass. to Fla., Minn., Kans. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; YORK; DAUPHIN; FRANKLIN.

5. *Verbena stricta* Vent. HOARY OR MULLEN-LEAVED VERVAIN. (Man. p. 778; I. F. f. 3061.) In dry soil, Ohio to Minn., S. Dak., Wyo., Tenn., Tex. and N. Mex. Nat. further east.—*Pennsylvania*: LANCASTER; WESTMORELAND.

6. *Verbena bracteosa* Michx. LARGE-BRACTED VERVAIN. (Man. p. 778; I. F. f. 3062.) On prairies and in waste places, Minn. and Ill. to Fla., B. C., Ariz. and Calif. Adv. eastward.—*Pennsylvania*: LANCASTER.

Several hybrid verbenas have been found in the State.

2. LIPPIA L.

1. *Lippia lanceolata* Michx. FOG FRUIT. (Man. p. 779; I. F. f. 3066.) In moist soil, N. J. to Ill., Kans., Fla., Tex. and Mexico. Also in Calif.—*Pennsylvania*: LANCASTER, on the Susquehanna; YORK; ALLEGHENY.

FAMILY 7. PHRYMACEAE Schauer. LOPSEED FAMILY.

1. PHRYMA L.

1. *Phryma leptostachya* L. LOPSEED. (Man. p. 856; I. F. f. 3377.) In woods and thickets, Can. to Minn., Fla. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

FAMILY 8. LABIATAE B. Juss. MINT FAMILY.

A. Ovary of 4 united carpels, 4-lobed: style not basal: nutlets laterally attached. Corolla very irregular; limb nearly 1-lipped, the upper lip very short.

1. TEUCRIUM.

Corolla nearly regular.

Stamens only slightly exerted, nearly equal.

2. ISANTHUS.

Stamens conspicuously exerted, didynamous.

3. TRICHOSTEMA.

B. Ovary of 4 distinct or nearly distinct carpels, style basal: nutlets basally attached.

Calyx with a crest on the upper side or on the upper lip: lips 2, entire.

4. SCUTELLARIA.

Calyx without a crest on the upper side: lips not entire.

Stamens included.

5. MARRUBIUM.

Stamens exerted.

Corolla conspicuously 2-lipped; lips different, the upper concave.

Anther-bearing stamens 4.

Upper pair of filaments longer than the lower.

Anther-sacs parallel or nearly so.

Upper pair of stamens declined, lower pair ascending: erect herbs.

6. AGASTACHE.

Upper and lower pair of stamens ascending: trailing herbs.

7. MEEHANIA.

Anther-sacs diverging.

Calyx barely 2-lipped, with 5 equal teeth: erect herbs.

8. NEPETA.

Calyx 2-lipped, with unequal teeth: trailing herbs.

9. GLECOMA.

Upper pair of filaments shorter than the lower.

Calyx manifestly 2-lipped.

10. PRUNELLA.

Calyx merely with 3-10 teeth or lobes.

Tube of the calyx faintly nerved, inflated at maturity.

11. PHYSOSTEGIA.

Tube of the calyx prominently 5-10-nerved, not inflated at maturity.

Anther-sacs transversely 2-valved.

12. GALEOPSIS.

Anther-sacs not transversely 2-valved.

Nutlets 3-sided, truncate above.

Calyx-teeth spine-tipped.

13. LEONURUS.

Calyx-teeth not spine-tipped.

14. LAMIMUM.

Nutlets nearly terete, rounded above.

15. STACHYS.

Anther-bearing stamens 2.

Connective of the anther elongated, bearing a perfect sac at one end and a rudimentary one at the other.

16. SALVIA.

Connective short: anther-sacs confluent.

Calyx not 2-lipped; tube 15-ribbed; lobes nearly equal.

17. MONARDA.

Calyx 2-lipped; tube 13-ribbed; lobes unequal.

18. BLEPHILIA.

Corolla regular or if 2-lipped, the upper lip flat or not concave.

a. Flowers in axillary whorls or clusters; these sometimes forming terminal spike-like racemes.

Corolla 2-lipped.

Filaments curved, converging under the upper lip of the corolla.

Anther-bearing stamens 2.

19. HEDEOMA.

Anther-bearing stamens 4.

Corolla-tube strongly bent.

20. MELISSA.

Corolla-tube straight.

Calyx with 5 nearly equal teeth, not 2-lipped.

21. SATUREIA.

Calyx 2-lipped.

22. CLINOPODIUM.

- Filaments straight, often spreading.
 Calyx-tube 15-nerved. 23. *HYSSOPUS*.
 Calyx-tube 10-13-nerved.
 Anther-bearing stamens 4.
 Anther-sacs divergent.
 Calyx equally 5-lobed : erect herbs. 24. *ORIGANUM*.
 Calyx 2-lipped : creeping herbs. 25. *THYMUS*.
 Anther-sacs parallel. 26. *KOELLIA*.
 Anther-bearing stamens 2. 27. *CUNILA*.
 Corolla regular with 4-5 teeth.
 Anther-bearing stamens 2 : foliage not aromatic. 28. *LYCOPUS*.
 Anther-bearing stamens 4 : foliage aromatic. 29. *MENTHA*.
 b. Flowers in loose terminal panicles.
 Lower lip of corolla fringed : native species. 30. *COLLINSONIA*.
 Lower lip of corolla not fringed : naturalized species. 31. *PERILLA*.

1. *TEUCRIUM* L.

- Calyx canescent, the upper lobes obtuse. 1. *T. Canadense*.
 Calyx villous, the upper lobes acutish. 2. *T. occidentale*.

1. *Teucrium Canadense* L. AMERICAN GERMANDER OR WOOD SAGE. (Man. p. 782 ; I. F. f. 3070.) In moist thickets or along marshes, N. B. to Man., Fla., Kans., Tex. and Mex.—*Pennsylvania* : PIKE ; NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; LUZERNE ; HUNTINGDON ; ALLEGHENY.

2. *Teucrium occidentale* A. Gray. HAIRY GERMANDER. (Man. p. 782 ; I. F. f. 3071.) In moist soil, Ont. to Pa., B. C., Kans., N. Mex. and Calif.—*Pennsylvania* : PHILADELPHIA.

2. *ISANTHUS* Michx.

1. *Isanthus bracheatus* (L.) B.S.P. FALSE PENNYROYAL. (Man. p. 782 ; I. F. f. 3072.) In sandy soil, especially along streams, Quebec and Ont. to Minn., Kans., Ga. and Tex.—*Pennsylvania* : BUCKS ; PHILADELPHIA ; LANCASTER ; DAUPHIN ; FRANKLIN ; LEBANON ; HUNTINGDON ; ALLEGHENY.

3. *TRICHOSTEMA* L.

- Foliage viscid-pubescent : leaf-blades of an oblong or lanceolate type. 1. *T. dichotomum*.
 Foliage glabrous or merely puberulent : leaf-blades of a linear type. 2. *T. lineare*.

1. *Trichostema dichotomum* L. BLUE CURLS. BASTARD PENNYROYAL. (Man. p. 782 ; I. F. f. 3073.) In dry fields, Me. to Fla., Pa., Ky. and Tex.—*Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; PHILADELPHIA ; DELAWARE ; CHESTER ; LANCASTER ; YORK ; FRANKLIN ; LUZERNE ; ALLEGHENY ; ERIE.

2. *Trichostema lineare* Nutt. NARROW-LEAVED BLUE CURLS. (Man. p. 783 ; I. F. f. 3074.) In sandy fields and dry pine barrens, R. I. to Ga. and La.—*Pennsylvania* : PHILADELPHIA, on Schuylkill.

4. SCUTELLARIA L.

Fruit very slightly elevated on the small gynobase : nutlets wingless.

Corolla less than 11 mm. long.

1. *S. lateriflora*.

Corolla over 11 mm. long.

Flowers in terminal racemes or panicles.

Leaf-blades above the middle of the stem cordate at the base.

Foliage, especially the internodes of the stem and the inflorescence copiously pubescent.

2. *S. cordifolia*.

Foliage glabrous or with scattered hairs about the nodes and in the inflorescence.

3. *S. saxatilis*.

Leaf-blades above the middle of the stem abruptly or gradually narrowed at the base.

Leaves with toothed blades.

Corolla over 2 cm. long.

4. *S. serrata*.

Corolla less than 2 cm. long.

Corolla copiously pubescent.

5. *S. incana*.

Corolla glabrous or nearly so.

6. *S. pilosa*.

Leaves, at least those above the middle of the stem, with entire blades.

7. *S. integrifolia*.

Flowers solitary in the axils of leaf-like bracts.

Corolla less than 1.5 cm. long.

8. *S. parvula*.

Corolla over 1.5 cm. long.

9. *S. galericulata*.

Fruit elevated on a slender gynobase : nutlets winged.

10. *S. nervosa*.

1. *Scutellaria lateriflora* L. MAD-DOG SKULLCAP. (Man. p. 783; I. F. f. 3075.) In wet places, Newf. to B. C., Fla., N. Mex. and Wash. *Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; COLUMBIA; FRANKLIN; ALLEGHENY.

2. *Scutellaria cordiflora* Muhl. HEART-LEAVED SKULLCAP. (Man. p. 784; I. F. f. 3078.) In woods and thickets, Pa. to Fla., west to Wis., Kans. and Tex.—*Pennsylvania*: LANCASTER; YORK; DAUPHIN; LYCOMING; HUNTINGDON; ALLEGHENY; ERIE.

3. *Scutellaria saxatilis* Ridd. ROCK SKULLCAP. (Man. p. 785; I. F. f. 3086.) On moist banks and in thickets, Del. to Va., Ohio and Tenn.—*Pennsylvania*: WESTMORELAND; ALLEGHENY.

4. *Scutellaria serrata* Andr. SHOWY SKULLCAP. (Man. p. 783; I. F. f. 3076.) In woods, N. Y. and Pa. to N. C., Ill. and Ky.—*Pennsylvania*: DELAWARE, Upper Darby.

5. *Scutellaria incana* Muhl. DOWNY SKULLCAP. (Man. p. 784; I. F. f. 3077.) In moist woods and thickets, Ont. to Ill., Kans., N. C. and Ala.—*Pennsylvania*: LANCASTER; ALLEGHENY.

6. *Scutellaria pilosa* Michx. HAIRY SKULLCAP. (Man. p. 784; I. F. f. 3079.) In dry sandy woods and thickets, N. Y. and Pa. to Mich., Mo., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; LANCASTER; FRANKLIN; ALLEGHENY.

7. *Scutellaria integrifolia* L. LARGER OR HYSSOP SKULLCAP. (Man. p. 784; I. F. f. 3080.) In fields, woods and thickets, Conn. and R. I. to W. Va., Fla., La. and Tex.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; MONTGOMERY; DAUPHIN; BERKS; FRANKLIN; HUNTINGDON.

8. *Scutellaria parvula* Michx. SMALL SKULLCAP. (Man. p. 784; I. F. f. 3083.) In moist sandy soil, Quebec to Ont., S. Dak., N. J., Fla., Neb. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANLIN; ALLEGHENY.

9. *Scutellaria galericulata* L. MARSH SKULLCAP. (Man. p. 785; I. F. f. 3087.) In swamps and along streams, Newf. to Alaska, N. C., Ohio, Neb., Ariz. and Wash.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; YORK; BUCKS; BLAIR; CENTRE; ERIE.

10. *Scutellaria nervosa* Pursh. VEINED SKULLCAP. (Man. p. 785; I. F. f. 3088.) In moist woods and thickets, N. Y. and N. J. to Ill., N. C., Tenn. and Mo.—*Pennsylvania*: BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

5. MARRUBIUM L.

1. *Marrubium vulgare* L. WHITE HOARHOUND. (Man. p. 785; I. F. f. 3089.) In waste places, Me. and Ont. to Minn., B. C., N. C., Tex. and Mex. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; PHILADELPHIA; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

6. AGASTACHE Clayt.

Corolla greenish yellow; calyx-lobes barely acute. 1. *A. nepetoides*.

Corolla purplish; calyx-lobes acuminate. 2. *A. scrophulariaefolia*.

1. *Agastache nepetoides* (L.) Kuntze. CATNIP GIANT-HYSSOP. (Man. p. 786; I. F. f. 3090.) In woods and thickets, Vt. and Ont. to S. Dak., Kans., Ga. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; FRANKLIN; ALLEGHENY.

2. *Agastache scrophulariaefolia* (Willd.) Kuntze. FIGWORT. GIANT-HYSSOP. (Man. p. 786; I. F. f. 3091.) In woods and thickets, Mass. to Wis., Kans., N. C. and Ky.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

7. MEEHANIA Britton.

1. *Meehania cordata* (Nutt.) Britton. MEEHANIA. (Man. p. 786; I. F. f. 3093.) In rich moist woods and thickets, Pa. to Tenn. and N. C.—*Pennsylvania*: WESTMORELAND, Turtle Creek; ALLEGHENY.

8. NEPETA L.

1. *Nepeta Cataria* L. CATMINT. CATNIP. (Man. p. 787; I. F. f. 3094.) In waste places, N. B. and Quebec to S. Dak., Va. and Kans.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; BLAIR; ERIE; ALLEGHENY.

9. GLECOMA L.

1. *Glechoma hederacea* L. GROUND IVY. GILL-OVER-THE-GROUND. (Man. p. 787; I. F. f. 3095.) In waste places, woods and thickets, Newf. to Minn., Ga. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; HUNTINGDON; ALLEGHENY.

10. PRUNELLA L.

1. *Prunella vulgaris* L. SELF-HEAL. HEAL-ALL. (Man. p. 788; I. F. f. 3098.) In fields, woods and waste places, throughout nearly the whole of N. Am. Nat. from Eu.—*Pennsylvania*: PIKE; MONROE; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

11. PHYSOSTEGIA Benth.

1. *Physostegia Virginiana* (L.) Benth. FALSE DRAGON-HEAD. (Man. p. 788; I. F. f. 3100.) In moist soil, Quebec to the N. W. Terr., Fla., La. and Tex.—*Pennsylvania*: LANCASTER, on the Susquehanna; YORK; DAUPHIN; LUZERNE; SUSQUEHANNA; ALLEGHENY..

12. GALEOPSIS L.

Leaf-blades mainly linear or lanceolate : plant puberulent. 1. *G. Ladanum*.
Leaf-blades mainly ovate : plant hispid. 2. *G. Tetrahit*.

1. *Galeopsis Ladanum* L. RED HEMP-NETTLE. (Man. p. 790; I. F. f. 3106.) In waste places, N. B. to Mich. and N. J. Adv. or nat. from Eu.—*Pennsylvania*: DELAWARE.

2. *Galeopsis Tetrahit* L. HEMP-NETTLE. (Man. p. 790; I. F. f. 3107.) In wet places, Newf. to Alaska, N. C. and Mich. Nat. from Eu.—*Pennsylvania*: MONROE; CARBON; DELAWARE; ERIE.

13. LEONURUS L.

Leaf-blades lobed or parted.

Leaf-blades 2-5-cleft, or the upper 3-cleft.

1. *L. Cardiaca*.

Leaf-blades deeply 3-parted, the segments cleft or incised.

2. *L. Sibiricus*.

Leaf-blades toothed or incised-dentate.

3. *L. Marrubiastrum*.

1. *Leonurus Cardiaca* L. MOTHERWORT. (Man. p. 790; I. F. f. 3108.) In waste places, N. S. to N. C., S. Dak. and Kans. Nat. from Eu.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

2. *Leonurus Sibiricus* L. SIBERIAN MOTHERWORT. (Man. p. 790; I. F. f. 3109.) In waste and cult. soil, Pa. and Del. Nat. of eastern Asia.—*Pennsylvania*: PHILADELPHIA.

3. *Leonurus Marrubiastrum* L. HOARHOUND MOTHERWORT. (Man. p. 790; I. F. f. 3110.) In waste places, N. J., Pa. and Del. Nat. from Eu.—*Pennsylvania*: PHILADELPHIA; DELAWARE; CHESTER.

14. LAMIUM L.

Upper stem-leaves with sessile or partly clasping blades. 1. *L. amplexicaule*.

Upper stem-leaves with petioled blades.

Corolla 12-18 mm. long : leaf-blades not blotched.

2. *L. purpureum*.

Corolla 20-27 mm. long : leaf-blades blotched.

3. *L. maculatum*.

1. *Lamium amplexicaule* L. HENBIT. (Man. p. 791; I. F. f. 3111.) In waste and cult. ground, N. B. to Ont., B. C., Fla. and Ark. Nat. from

Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Lamium purpureum* L. RED DEAD NETTLE. (Man. p. 791; I. F. f. 3112.) In waste and cult. soil, R. I. to Pa. and D. C. Also in ballast about northern seaports. Nat. or adv. from Eu.—*Pennsylvania*: PIKE; DELAWARE; CHESTER; LANCASTER.

3. *Lamium maculatum* L. SPOTTED DEAD NETTLE. (Man. p. 791; I. F. f. 3113.) Along roadsides, escaped, Me. to Va. Nat. of Eu. and Asia.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; ALLEGHENY.

15. STACHYS L.

Leaf-blades narrowed at the base, relatively narrow.

Stem glabrous: leaf-blades entire or essentially so.

Leaf-blades linear, mostly less than 5 mm. wide. 1. *S. hyssopifolia*.

Leaf-blades oblong to linear-oblong, mostly over 5 mm. wide.

2. *S. Atlantica*.

Stem retrorsely pubescent: leaf-blades serrate.

3. *S. ambigua*.

Leaf-blades cordate or truncate at the base, relatively broad.

Stem glabrous or nearly so.

4. *S. tenuifolia*.

Stem hirsute.

Lower leaves with petioles but little longer than those of the upper.

5. *S. palustris*.

Lower leaves with petioles several times longer than those of the upper.

Plant perennial: leaf-blades of an oblong-lanceolate type.

6. *S. aspera*.

Plant annual: leaf-blades of an ovate type.

7. *S. arvensis*.

1. *Stachys hyssopifolia* Michx. HYSSOP HEDGE NETTLE. (Man. p. 792; I. F. f. 3116.) In fields and thickets, Man. to Mich. and Fla.—*Pennsylvania*: BUCKS, Bristol; LEBANON, near Cornwall.

2. *Stachys Atlantica* Britton. COAST HEDGE NETTLE. (Man. p. 792.) In marshy ground, L. I. and Pa.—*Pennsylvania*: BUCKS.

3. *Stachys ambigua* (A. Gray) Britton. DENSE-FLOWERED HEDGE NETTLE. (Man. p. 792; I. F. f. 3117.) In moist soil, Pa. to Ga., Ill. and Ky.—*Pennsylvania*: BUCKS, Bristol.

4. *Stachys tenuifolia* Willd. SMOOTH HEDGE NETTLE. (Man. p. 792; I. F. f. 3118.) In moist fields and thickets, N. Y. to Ill., Kans., N. C. and La.—*Pennsylvania*: BUCKS, Bristol.

5. *Stachys palustris* L. HEDGE NETTLE. (Man. p. 793; I. F. f. 3119.) In moist soil, Newf. to the N. W. Terr., Ore., Pa., Ill., Mich. and N. Mex.—Also in Eu. and Asia.—*Pennsylvania*: BUCKS; NORTHAMPTON; PHILADELPHIA; DELAWARE; LANCASTER; ERIE; ALLEGHENY.

6. *Stachys aspera* Michx. ROUGH HEDGE NETTLE. (Man. p. 793; I. F. f. 3120.) In moist soil, Ont. to Minn., Fla. and La.—*Pennsylvania*: BUCKS; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

7. *Stachys arvensis* L. CORN OR FIELD WOUNDWORT. (Man. p. 793; I. F. f. 3122.) In waste places, Me., Mass., and in ballast about the eastern seaports. Nat. from Eu.—*Pennsylvania*: PHILADELPHIA.

16. *SALVIA* L.

Leaves mainly basal; blades lyrate-pinnatifid.

Leaves cauline; blades merely toothed.

1. *S. lyrata*.

2. *S. urticifolia*.

Calyx-lobes acuminate: upper lip of the corolla shorter than the lower one.

3. *S. Sclarea*.

Calyx-lobes subulate-acicular: upper lip of the corolla longer than the lower one.

1. *Salvia lyrata* L. LYRE-LEAVED SAGE. (Man. p. 794; I. F. f. 3124.) In dry, mostly sandy woods and thickets, N. J. to Fla., Ill., Ark. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; LANCASTER; YORK; MONTGOMERY.

2. *Salvia urticifolia* L. NETTLE-LEAVED SAGE. (Man. p. 795; I. F. f. 3128.) In woods and thickets, Pa. to Ky., Ga. and La.—*Pennsylvania*: PHILADELPHIA.

3. *Salvia Sclarea* L. CLARY. CLEAR-EYE. (Man. p. 795; I. F. f. 3130.) In fields, Pa. to S. C., escaped. Nat. from Eu.—*Pennsylvania*: HUNTINGDON.

17. *MONARDA* L.

Flower-clusters terminal or solitary.

Corolla scarlet, mostly over 3 cm. long.

1. *M. didyma*.

Corolla pink-purple or white, mostly less than 3 cm. long.

Corolla white or greenish pink.

2. *M. Clinopodia*.

Corolla pink, purple or purple-red.

Plants with spreading pubescence.

Bracts purple or pink: corolla pink or purplish.

3. *M. fistulosa*.

Bracts purple-red or red: corolla deep purple or purple-red.

4. *M. media*.

Plants canescent.

5. *M. mollis*.

Flower-clusters axillary.

6. *M. punctata*.

1. *Monarda didyma* L. OSWEGO TEA. AMERICAN BEE BALM. (Man. p. 795; I. F. f. 3131.) In moist soil, especially along streams, N. B. (?) to Ont., Mich. and Ga.—*Pennsylvania*: NORTHAMPTON; BUCKS; PIKE; MONROE; BLAIR; CLARION; ALLEGHENY; ERIE; SOMERSET; WESTMORELAND.

2. *Monarda Clinopodia* L. BASAL BALM. (Man. p. 796; I. F. f. 3132.) In woods and thickets, Ont. to Ky. and Ga.—*Pennsylvania*: DAUPHIN; NORTHAMPTON; PHILADELPHIA; LANCASTER.

3. *Monarda fistulosa* L. WILD BERGAMOT. (Man. p. 796; I. F. f. 3133.) On dry hills and in thickets, Me. and Ont. to Minn., Kans., Fla. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHES-TER; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; ALLEGHENY; ARMSTRONG; ERIE; WESTMORELAND.

4. *Monarda media* Willd. PURPLE BERGAMOT. (Man. p. 796; I. F. f. 3134.) In moist thickets, Me. to Ont., Pa. and Va.—*Pennsylvania*: NORTHAMPTON; BUCKS.

5. *Monarda mollis* L. CANESCENT WILD BERGAMOT. (Man. p. 1051.) In dry soil, N. E. to S. Dak., Ga. and Tex.—*Pennsylvania*: NORTHAMPTON.

6. *Monarda punctata* L. HORSE-MINT. (Man. p. 796 I. F. f. 3137.) In dry fields, southern N. Y. to Fla., Wis., Kans. and Tex.—*Pennsylvania*: BUCKS; Bristol.

18. BLEPHILIA Raf.

Leaf-blades shallowly toothed: stem softly pubescent with short hairs.

1. *B. ciliata*.

Leaf-blades decidedly serrate: stem hirsute or villous-hirsute. 2. *B. hirsuta*.

1. *Blephilia ciliata* (L.) Raf. DOWNY BLEPHILIA. (Man. p. 797; I. F. f. 3139.) In dry woods and thickets, Mass. to Mich., Wis., Ga. and Mo.—*Pennsylvania*: NORTHAMPTON; CHESTER; HUNTINGDON; ARMSTRONG; ALLEGHENY.

2. *Blephilia hirsuta* (Pursh) Torr. HAIRY BLEPHILIA. (Man. p. 797; I. F. f. 3140.) In woods and thickets, Vt. to Wis., Kans., Ga. and Tex.—*Pennsylvania*: CAMERON; CLARION; SOMERSET; ALLEGHENY; MERCER; ERIE.

19. HEDEOMA Pers.

1. *Hedeoma pulegioides* (L.) Pers. AMERICAN PENNYROYAL. (Man. p. 797; I. F. f. 3141.) In dry fields, N. S. to Ont. and Minn., Fla. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; MONTGOMERY; HUNTINGDON; ERIE; ALLEGHENY.

20. MELISSA L.

1. *Melissa officinalis* L. GARDEN OR LEMON BALM. BEE-BALM. (Man. p. 798; I. F. f. 3144.) In waste places, thickets and woods, Me. to Ga. and W. Va. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LUZERNE; FRANKLIN; HUNTINGDON; ALLEGHENY.

21. SATUREIA L.

1. *Satureia hortensis* L. SAVORY. SUMMER SAVORY. (Man. p. 798; I. F. f. 3145.) In waste places, N. B. and Ont. to Pa., west to Nev. Nat. or adv. from Eu.—*Pennsylvania*: LANCASTER; HUNTINGDON.

22. CLINPODIUM L.

1. *Clinopodium vulgare* L. FIELD OR WILD BASIL. (Man. p. 799; I. F. f. 3146.) In woods and thickets, N. S. to N. C., Minn. and Man., south in the Rocky Mts. to Colo. Also in Eu. and Asia.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; SOMERSET; ERIE; ALLEGHENY.

23. HYSSOPUS L.

1. *Hyssopus officinalis* L. HYSSOP. (Man. p. 800; I. F. f. 3152.) Along roadsides and in waste places, Ont. to Me. and N. C., and on the Pacific Coast. Nat. from Eu.—*Pennsylvania*: BUCKS.

24. ORIGANUM L.

1. *Origanum vulgare* L. WILD MARJORAM. (Man. p. 800; I. F. f. 3153.) In fields and waste places, Ont. to N. J. and Pa. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; PHILADELPHIA; LEHIGH.

25. **THYMUS** L.

1. **Thymus Serpyllum** L. WILD OR CREEPING THYME. (Man. p. 802; I. F. f. 3166.) In thickets, woods and along roadsides, N. S. to Mass., N. Y., Pa. and N. C. Nat. from Eu.—*Pennsylvania*: MONTGOMERY; LANCASTER.

26. **KOELLIA** Moench.

Leaves with prevailing linear, linear-lanceolate, or oblong-lanceolate blades.

Calyx-lobes triangular-ovate, merely acute.

1. *K. Virginiana*.

Calyx-lobes subulate, subulate-lanceolate, sometimes bristle-tipped.

2. *K. flexuosa*.

Leaf-blades linear or narrowly linear.

Leaf-blades lanceolate, all or some of them toothed.

Flower clusters dense: bracts erect or appressed.

Plant hirsute or pilose.

3. *K. pilosa*.

Plant glabrate or merely puberulent.

4. *K. verticillata*.

Flower-clusters lax: bracts spreading.

5. *K. clinopodioides*.

Leaves with prevailing ovate, oblong-ovate or ovate-lanceolate blades.

Calyx-lobes subulate.

6. *K. incana*.

Calyx-lobes triangular.

7. *K. mutica*.

1. **Koellia Virginiana** (L.) MacM. VIRGINIA MOUNTAIN-MINT. (Man. p. 801; I. F. f. 3155.) In dry fields and thickets, Quebec to Minn., Ga., Ala. and Ky.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; CAMBRIA; ERIE; FAYETTE; ALLEGHENY.

2. **Koellia flexuosa** (Walt.) MacM. NARROW-LEAVED MOUNTAIN-MINT. (Man. p. 801; I. F. f. 3154.) In fields and thickets, Me. and N. H. to Fla., Ont., Kans. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; PERRY; ARMSTRONG; ALLEGHENY.

3. **Koellia pilosa** (Nutt.) Britton. HAIRY MOUNTAIN-MINT. (Man. p. 801; I. F. f. 3156.) On prairies and in dry woods, Ohio to Ga., Kans. and Ark.—*Pennsylvania*: MONROE; HUNTINGDON.

4. **Koellia verticillata** (Michx.) Kuntze. TORREY'S MOUNTAIN-MINT. (Man. p. 801; I. F. f. 5157.) In dry fields and thickets, Vt. to R. I., N. Y., Va., Pa. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; DAUPHIN; LYCOMING; ALLEGHENY.

5. **Koellia clinopodioides** (T. & G.) Kuntze. BASIL MOUNTAIN-MINT. (Man. p. 801; I. F. f. 3158.) In dry soil, N. Y. and Pa. to Tenn.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; LANCASTER; BERKS.

6. **Koellia incana** (L.) Kuntze. HOARY MOUNTAIN-MINT. (Man. p. 802; I. F. f. 3161.) Dry thickets and hillsides, Me. to Ont., Ohio and Fla.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; BEDFORD; HUNTINGDON; WESTMORELAND; ALLEGHENY.

7. **Koellia mutica** (Michx.) Britt. SHORT-TOOTHED MOUNTAIN-MINT. (Man. p. 802; I. F. f. 3164.) In sandy soil, Me. to Va. and Fla., west to Mo.—*Pennsylvania*: NORTHAMPTON; DELAWARE; BUCKS; CHESTER.

27. *CUNILA* L.

1. *Cunila organoides* (L.) Britton. AMERICAN DITTANY. (Man. p. 803; I. F. f. 3167.) In dry woods and thickets, N. Y. to Fla., Ohio and Ga.—*Pennsylvania*: BRADFORD; MONROE; NORTHAMPTON; LUZERNE; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

28. *LYCOPUS* L.

Calyx-lobes ovate, shorter than the nutlets.

Stem not tuberous at the base: leaf-blades mainly ovate. 1. *L. Virginicus*.

Stem tuberous at the base: leaf-blades mainly oblong. 2. *L. communis*.

Calyx-lobes subulate or lanceolate.

Corolla twice as long as the calyx: bracts minute. 3. *L. sessilifolius*.

Corolla not twice as long as the calyx: bracts subulate. 4. *L. Americanus*.

1. *Lycopus Virginicus* L. PURPLE BUGLE-WEED. (Man. p. 803.) In moist soil, N. Y. to Ala., Neb. and Kans.—*Pennsylvania*: LACKAWANNA; MONROE; LUZERNE; NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; LEBANON; HUNTINGDON; ERIE; ALLEGHENY.

2. *Lycopus communis* Bicknell. COMMON BUGLE-WEED. (Man. p. 803.) In moist soil, Newf. to B. C., Va., Neb. and Ore.—*Pennsylvania*: NORTHAMPTON; LANCASTER.

3. *Lycopus sessilifolius* A. Gray. SESSILE-LEAVED WATER HOARHOUND. (Man. p. 804; I. F. f. 3169.) In wet soil, eastern Mass. to Fla.—*Pennsylvania*: LANCASTER.

3. *Lycopus Americanus* Muhl. CUT-LEAVED WATER HOARHOUND. (Man. p. 804; I. F. f. 3171.) In wet soil, Newf. to B. C., Fla., Tex., Utah and Calif.—*Pennsylvania*: LUZERNE; COLUMBIA; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

29. *MENTHA* L.

Flower-clusters, at least most of them, in terminal spike-like panicles.

Plants glabrous or essentially so.

Panicles slim, mostly less than 10 mm. thick: leaf-blades sessile or nearly so. 1. *M. spicata*.

Panicles stout, mostly over 10 mm. thick: leaf-blades petioled.

2. *M. piperita*.

Plants pubescent, at least about the nodes of the stem.

Panicles relatively thin, mostly less than 11 mm. thick.

Leaf-blades of a lanceolate or oblong-lanceolate type, mostly acute.

3. *M. longifolia*.

Leaf-blades of an elliptic or ovate-oblong type, mostly obtuse.

4. *M. rotundifolia*.

Panicles relatively stout, mostly over 11 mm. thick.

Leaf-blades sessile: panicles, at least the terminal one elongated.

5. *M. alopecuroides*.

Leaf-blades, or those below the inflorescence, petioled: panicles short.

Leaf-blades merely serrate.

6. *M. aquatica*.

Leaf-blades incised and crisped.

7. *M. crispa*.

Flower-clusters axillary, not in terminal spike-like racemes.

Calyx-lobes triangular : leaf-blades crenate-dentate. 8. *M. arvensis*.

Calyx-lobes subulate : leaf-blades serrate.

Calyx-lobes ciliate ; tube glabrous.

9. *M. gentilis*.

Calyx-lobes and tube more or less pubescent.

Stem pubescent with reflexed hairs : leaves closely pubescent.

10. *M. sativa*.

Stem pubescent with spreading hairs : leaves glabrous or nearly so.

11. *M. Canadensis*.

1. *Mentha spicata* L. SPEARMINT. (Man. p. 805 ; I. F. f. 3174.) In moist fields or waste places, N. S. to Ont., Minn., Utah, Fla. and Kans. Nat. from Eu.—*Pennsylvania* : PIKE ; NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; SCHUYLKILL ; COLUMBIA ; FRANKLIN ; HUNTINGTON ; ERIE ; ALLEGHENY.

2. *Mentha piperita* L. PEPPERMINT. (Man. p. 805 ; I. F. f. 3175.) In wet soil, N. S. to Minn., Fla. and Tenn.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; DAUPHIN ; COLUMBIA ; FRANKLIN ; HUNTINGDON ; ERIE ; ALLEGHENY.

3. *Mentha longifolia* (L.) Huds. HORSE MINT. (Man. p. 805 ; I. F. f. 3177.) In waste places, Conn. to Pa. and N. J. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; PHILADELPHIA.

4. *Mentha rotundifolia* (L.) Huds. ROUND-LEAVED MINT. (Man. p. 805 ; I. F. f. 3178.) In waste places, Me. to N. C., Tex. and Mex.—*Pennsylvania* : NORTHAMPTON ; ALLEGHENY.

5. *Mentha alopecuroides* Hull. WOOLLY MINT. (Man. p. 806 ; I. F. f. 3179.) Along roadsides, N. Y., N. J. and Pa. to Mo. Nat. from Eu.—*Pennsylvania* : MONROE ; BUCKS ; LANCASTER ; LEBANON ; PERRY ; FRANKLIN.

6. *Mentha aquatica* L. WATER MINT. (Man. p. 806 ; I. F. f. 3180.) In wet places, N. S. to Pa. and Ga. Nat. from Eu.—*Pennsylvania* : LANCASTER.

7. *Mentha crispa* L. CRISP-LEAVED OR CURLED MINT. (Man. p. 806 ; I. F. f. 3181.) In swamps and roadside ditches, N. Y., N. J. and Pa.—*Pennsylvania* : NORTHAMPTON ; PHILADELPHIA.

8. *Mentha arvensis* L. CORN OR FIELD MINT. (Man. p. 806 ; I. F. f. 3182.) In dry waste places, N. B. to N. Y., N. J., Pa. and Fla. Also in Calif. and Mex.—*Pennsylvania* : NORTHAMPTON ; CHESTER ; LANCASTER ; DAUPHIN ; FRANKLIN ; HUNTINGDON ; BEDFORD ; ERIE.

9. *Mentha gentilis* L. CREEPING OR DOWNY WHORLED MINT. (Man. p. 806 ; I. F. f. 3183.) In waste places and along streams, Me. to northern N. Y., N. J. and Pa. Nat. from Eu.—*Pennsylvania* : MONROE ; NORTHAMPTON ; DAUPHIN ; LANCASTER.

10. *Mentha sativa* L. MARSH WHORLED MINT. (Man. p. 806 ; I. F. f. 3184.) In waste places, N. S. to Pa. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; LANCASTER.

11. *Mentha Canadensis* L. AMERICAN WILD MINT. (Man. p. 806 ; I. F. f. 3185.) In moist soil, N. B. to the N. W. Terr., B. C., Va., Kans., N. Mex. and Nev.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE.

CHESTER; LANCASTER; DAUPHIN; FRANKLIN; BEDFORD; ERIE; SUSQUEHANNA; ALLEGHENY.

30. COLLINSONIA L.

1. *Collinsonia Canadensis* L. HORSE-BALM. RICH-WEED. (Man. p. 807; I. F. f. 3186.) In moist woods, Me. and Ont. to Wis., Fla. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; DAUPHIN; CUMBERLAND; BEAVER.

31. PERILLA Ard.

1. *Perilla frutescens* (L.) Britton. PERILLA. (Man. p. 807; I. F. f. 3187.) In waste places, escaped, N. Y. to Ill. Nat. of India.—*Pennsylvania*: BUCKS, Nockamixon; NORTHAMPTON, Easton; YORK.

FAMILY 9. SOLANACEAE Pers. POTATO FAMILY.

Fruit a berry.

Corolla-tube plicate: lobes usually induplicate: berries pulpy.

Anthers not connected: sacs opening lengthwise, not by terminal pores.

Ovary 3-5-celled: calyx-lobes nearly distinct, auricled at the base.

1. *PHYSALODES*.

Ovary 2-celled: calyx-lobes united to near the tips.

2. *PHYSALIS*.

Anthers converging or connate.

Anther-sacs commonly opening by terminal pores or short slits.

3. *SOLANUM*.

Anther-sacs opening lengthwise and introrsely.

4. *LYCOPERSICON*.

Corolla-tube barely, if at all plicate; segments imbricated and berries dry.

5. *LYCIUM*.

Fruit a capsule: corolla funnelform.

Capsule circumscissile near the top, which separates as a lid.

6. *HYOSCYAMUS*.

Capsule opening by valves.

Capsules armed with prickles.

7. *DATURA*.

Capsules unarmed.

Flowers in racemes or panicles: filaments nearly equal in length.

8. *NICOTIANA*.

Flowers solitary in the axils or opposite the leaves: filaments unequal in length.

9. *PETUNIA*.

1. *PHYSALODES* Boehm.

1. *Physalodes Physalodes* (L.) Britton. APPLE OF PERU. (Man. p. 808; I. F. f. 3189.) In waste places, escaped, N. S. to Ont., south to Fla. Adv. from Peru.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

2. *PHYSALIS* L.

Plants annual, with fibrous roots.

Foliage manifestly pubescent even in age.

Leaf-blades cordate and oblique at the base, sinuate: stem obtusely angled:

mature calyx 2-3 cm. long.

1. *P. pruinosa*.

Leaf-blades mostly truncate, scarcely oblique, repand-dentate: stem

acutely angled: mature calyx longer.

2. *P. Barbadensis*.

Foliage glabrous, at least in age.

Calyx-lobes broadly triangular: pedicel scarcely as long as the flower.

3. *P. ixocarpa*.

Calyx-lobes triangular-lanceolate: pedicel longer than the flower.

4. *P. Philadelphica*.

Plants perennial by rootstocks and roots.

Leaves glabrous.

4. *P. Philadelphica*.

Leaves pubescent.

Stem strigose with flat hairs.

5. *P. Virginiana*.

Stem clammy-pubescent with spreading hairs.

6. *P. heterophylla*.

1. *Physalis pruinosa* L. TALL HAIRY GROUND-CHERRY. (Man. p. 810; I. F. f. 3191.) In cult. soil, Mass. to Iowa, Mo. and Fla.—*Pennsylvania*: LANCASTER.

2. *Physalis Barbadosensis* Jacq. BARBADOES GROUND-CHERRY. (Man. p. 810; I. F. f. 3192.) Sandy soil, N. C., southern Ill. and Mex., the W. Indies and S. Am.—*Pennsylvania*: ALLEGHENY.

3. *Physalis ixocarpa* Brot. MEXICAN GROUND-CHERRY. STRAWBERRY TOMATO. (Man. p. 811; I. F. f. 3196.) In waste places, locally eastward. Native of Mex.—*Pennsylvania*: PHILADELPHIA.

4. *Physalis Philadelphica* Lam. PHILADELPHIA GROUND-CHERRY. (Man. p. 811; I. F. f. 3197.) In rich soil, R. I. to Ga., Neb. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; LANCASTER; FRANKLIN.

5. *Physalis Virginiana* Mill. VIRGINIA GROUND-CHERRY. (Man. p. 811; I. F. f. 3202.) Rich soil and open places, N. Y. to Man., Fla. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; PHILADELPHIA; YORK; LANCASTER; FRANKLIN; CLARION; ERIE.

5a. *P. Virginiana intermedia* Rydb. (Man. p. 812.) NORTHAMPTON.

6. *Physalis heterophylla* Nees. CLAMMY GROUND-CHERRY. (Man. p. 812; I. F. f. 3203.) In rich soil, N. B. to Saskatchewan, Fla., Colo. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; BEDFORD; HUNTINGDON; LUZERNE; ERIE.

6a. *P. heterophylla ambigua* (A. Gray) Rydb. (Man. p. 812.) MONROE; ALLEGHENY.

3. SOLANUM L.

Upright or spreading herbs.

Plants glabrous or simply pubescent, not prickly-armed. 1. *S. nigrum*.

Plants stellate-pubescent, prickly-armed.

Berry not enclosed in the calyx: perennial species. 2. *S. Carolinense*.

Berry enclosed in the accrescent calyx: annual species. 3. *S. rostratum*.

Climbing vine.

4. *S. Dulcamara*.

1. *Solanum nigrum* L. BLACK OR GARDEN NIGHTSHADE. (Man. p. 814; I. F. f. 3211.) In waste places or cult. soil, N. S. to the N. W. Terr., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

2. *Solanum Carolinense* L. HORSE-NETTLE. (Man. p. 814; I. F. f. 3213.) In dry fields and in waste places, Ont. to Mass., Fla., Ill., Neb.

and Tex.—*Pennsylvania*: PHILADELPHIA; CHESTER; LANCASTER; FRANKLIN; BUCKS; BEDFORD; ALLEGHENY.

3. *Solanum rostratum* Dunal. SAND BUR. BEAKED NIGHTSHADE. (Man. p. 815; I. F. f. 3216.) On prairies, S. Dak. to Tex. and Mex. A weed, Ont. to N. H., Mass. and N. J. Adv. from the west.—*Pennsylvania*: SUSQUEHANNA; LANCASTER; PHILADELPHIA.

4. *Solanum Dulcamara* L. NIGHTSHADE. BITTERSWEET. (Man. p. 815; I. F. f. 3218.) In waste places or in thickets, N. B., to Minn., N. J., Pa. and Kans. Nat. from Eu.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; COLUMBIA; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

4. LYCOPERSICON Mill.

1. *Lycopersicon Lycopersicon* (L.) Karst. TOMATO. (Man. p. 815; I. F. f. 3219.) Escaped, N. Y. and Pa. southward.—*Pennsylvania*: NORTHAMPTON; BEDFORD; ALLEGHENY.

5. LYCIUM L.

1. *Lycium vulgare* (Ait. f.) Dunal. MATRIMONY VINE. (Man. p. 816; I. F. f. 3220.) In thickets and waste places, escaped, Ont. to Conn.; Va., Minn. and Kans. Introd. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

6. HYOSCYAMUS L.

1. *Hyoscyamus niger* L. BLACK HENBANE. (Man. p. 816; I. F. f. 3221.) Waste places, N. S. to Ont., N. Y. and Mich. Nat. from Eu.—*Pennsylvania*: PHILADELPHIA.

7. DATURA L.

Corolla white: capsule with the lower prickles shorter than the upper: stem green. 1. *D. Stramonium*.

Corolla lavender or violet: capsule with equal prickles: stem purple.

2. *D. Tatula*.

1. *Datura Stramonium* L. STRAMONIUM. JAMESTOWN-WEED. (Man. p. 816; I. F. f. 3222.) In fields and waste places, N. S. to Fla., Minn. and Tex. Nat. from tropical regions, probably from Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; HUNTINGDON; ALLEGHENY.

2. *Datura Tatula* L. PURPLE THORN-APPLE OR STRAMONIUM. (Man. p. 816; I. F. f. 3223.) In fields and waste places, Ont. to Minn., N. Y., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; ALLEGHENY.

8. NICOTIANA L.

Calyx-lobes triangular: corolla about 2.5 cm. long, the tube short-cylindric.

1. *N. rustica*.

Calyx-lobes linear: corolla 10-15 cm. long, the tube slender and elongated.

2. *N. longiflora*.

1. *Nicotiana rustica* L. WILD TOBACCO. (Man. p. 817; I. F. f. 3225.) In fields and waste places, Ont., to Minn., N. Y. and Fla.—*Pennsylvania*: NORTHAMPTON.

2. *Nicotiana longiflora* Cav. LONG-FLOWERED TOBACCO. (Man. p. 817; I. F. f. 3226.) In waste places, eastern U. S. Native of S. Am.—*Pennsylvania*: NORTHAMPTON; DAUPHIN.

9. PETUNIA Juss.

Corolla white; tube cylindric.

1. *P. axillaris*.

Corolla violet-purple; tube campanulate.

2. *P. violacea*.

1. *Petunia axillaris* (Lam.) B.S.P. WHITE PETUNIA. (Man. p. 817; I. F. f. 3227.) In waste places, N. Y. and Pa. Native of southern Brazil.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; LANCASTER; DAUPHIN; ALLEGHENY.

2. *Petunia violacea* Lindl. VIOLET PETUNIA. (Man. p. 817; I. F. f. 3228.) In waste places, escaped, N. Y. and Pa. Native of southern Brazil and Paraguay.—*Pennsylvania*: DELAWARE; NORTHAMPTON; DAUPHIN; ALLEGHENY.

FAMILY 10. SCROPHULARIACEAE Lindl. FIGWORT FAMILY.

Upper lip or lobes of the corolla external in the bud, or wanting (except in *Mimulus*).

Leaves prevailingly alternate.

1. VERBASCUM.

Leaves prevailingly opposite.

Corolla-tube with a spur or sac on the lower side near the base.

Leaf-blades palmately veined and palmately lobed.

2. CYMBALARIA.

Leaf-blades pinnately veined and entire.

Flowers axillary to leaf-like bracts and remote.

3. KICKXIA.

Flowers approximate, in terminal racemes.

4. LINARIA.

Corolla-tube with neither spur nor sac.

Filaments 5, 4 anther-bearing, 1 sterile (staminodium) and different from the others.

Staminodium a scale, adnate to the upper side of the corolla-tube.

Corolla-tube stouter than the calyx, the lobes of the lower lip induplicate.

5. COLLINSIA.

Corolla-tube longer than the calyx, the lobes of the lower lip flat.

6. SCROPHULARIA.

Staminodium elongated.

Filaments longer than the staminodium: seeds winged.

7. CHELONE.

Filaments shorter than the staminodium: seeds wingless.

8. PENTSTEMON.

Filaments 2 or 4.

Trees.

9. PAULOWNIA.

Herbs.

Anther-bearing filaments 4, or rarely 3.

Sepals manifestly united.

Calyx tubular: corolla 2-lipped.

10. MIMULUS.

Calyx campanulate: corolla essentially regular.

11. LIMOSELLA.

- Sepals distinct or essentially so. 12. *CONOBEA*.
 Anther-bearing filaments 2.
 Calyx of 5 nearly distinct sepals.
 Filaments short and stout, or almost wanting.
 Filaments elongated and slender. 13. *GRATIOLA*.
 Calyx of 5 partially united sepals. 14. *ILYSANTHES*.
 15. *MICRANTHEMUM*.
 Lower lips or lobes of the corolla external in the bud.
 Sepals distinct or essentially so.
 Corolla rotate or campanulate : stamens not surpassing the corolla lobes. 16. *VERONICA*.
 Corolla tubular : stamens exserted. 17. *LEPTANDRA*.
 Sepals almost wholly or only partially united into a tube.
 Corolla various, but only slightly 2-lipped : stamens not ascending under the upper lip.
 Corolla funnellform : capsule exserted.
 Anther-sacs awned at the base : corolla yellow. 18. *DASYSTOMA*.
 Anther-sacs awnless : corolla rose-purple, pink or white. 19. *GERARDIA*.
 Corolla salverform : capsule mostly in the calyx. 20. *BUCHNERA*.
 Corolla strongly 2-lipped : stamens ascending under the upper lip.
 Anther-sacs unlike, the inner pendulous. 21. *CASTILLEJA*.
 Anther-sacs alike, parallel.
 Ovules 1-2 in each cavity of the ovary : capsuies 1-4-seeded. 22. *MELAMPYRUM*.
 Ovules several to many in each cavity : capsules many-seeded. 23. *PEDICULARIS*.

1. *VERBASCUM* L.

Plant densely woolly or finely tomentose.

Leaf-blades entire or merely undulate : racemes usually simple : capsules 7-10 mm. long. 1. *V. Thapsus*.

Leaf-blades crenate : racemes usually compound : capsules 4-5 mm. long. 2. *V. Lychnitis*.

Plant glabrous or sparingly glandular-pubescent above. 3. *V. Blattaria*.

1. *Verbascum Thapsus* L. GREAT MULLEN. (Man. p. 819; I. F. f. 3229.) In fields and waste places, N. S. to S. Dak., Fla. and Kans. Nat. from Eu.—*Pennsylvania* : PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGTON; ALLEGHENY.

2. *Verbascum Lychnitis* L.¹ WHITE MULLEN. (Man. p. 820; I. F. f. 3231.) In fields and waste places, Ont. to N. J. and Pa. Reported from Kans. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON; PHILADELPHIA; DELAWARE; LEBANON.

3. *Verbascum Blattaria* L. MOTH MULLEN. (Man. p. 820; I. F. f. 3232.) In fields and waste places, Quebec to Fla., Minn. and Kans. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

2. *CYMBALARIA* Medic.

1. *Cymbalaria Cymbalaria* (L.) Wettst. KENILWORTH ON COLISEUM IVY. (Man. p. 820; I. F. f. 3233.) In waste places and roadsides,

adv. from Eu., N. Y., N. J. and Pa., and in seaport ballast.—*Pennsylvania*; BUCKS.

3. *KICKXIA* Dumort.

Leaf-blades ovate to orbicular-ovate, merely rounded or cordate at the base.

1. *K. spuria*.

Leaf-blades triangular, hastate at the base.

2. *K. Elatine*.

1. *Kickxia spuria* (L.) Dumort. ROUND-LEAVED TOAD-FLAX. (Man. p. 820; I. F. f. 3234.) Nat. of Eu. Adv. or nat. in eastern N. Am.—*Pennsylvania*: PHILADELPHIA, especially on ballast.

2. *Kickxia Elatine* (L.) Dumort. SHARP-POINTED FLUELLIN OR TOAD-FLAX. (Man. p. 320; I. F. f. 3235.) Nat. of Eu. Nat. in eastern N. Am.—*Pennsylvania*: BUCKS, Pleasantville; PHILADELPHIA.

4. *LINARIA* Hill.

Corolla yellow, 25-30 mm. long.

1. *L. Linaria*.

Corolla blue or white, 6-12 mm. long.

Corolla blue; spur filiform, curved: native species.

2. *L. Canadensis*.

Corolla white, striped with blue or purple; spur conic, short: naturalized species.

3. *L. repens*.

1. *Linaria Linaria* (L.) Karst. RANSTEAD. BUTTER-AND-EGGS. (Man. p. 821; I. F. f. 3236.) In fields and waste places, N. S. to Man., Va. and Kans. Nat. from Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; MONTGOMERY; FRANKLIN; HUNTINGDON; ERIE; BERKS; ALLEGHENY.

2. *Linaria Canadensis* (L.) Dumort. BLUE OR WILD TOAD-FLAX. (Man. p. 821; I. F. f. 3238.) In dry soil, N. S. to Fla., Ore. and Calif. Also in Cent. and S. Am.—*Pennsylvania*: LACKAWANNA; BUCKS; DELAWARE; LANCASTER.

3. *Linaria repens* (L.) Mill. PALE-BLUE TOAD-FLAX. (Man. p. 821; I. F. f. 3239.) Newf. and in ballast about the Atlantic seaports. Adv. from Eu.—*Pennsylvania*: PHILADELPHIA, on or about ballast.

5. *COLLINSIA* Nutt.

1. *Collinsia verna* Nutt. BLUE-EYED MARY. (Man. p. 826; I. F. f. 3261.) In moist woods and thickets, western N. Y. and Ont. to Wis., Pa., Ky. and the Ind. Terr.—*Pennsylvania*: WESTMORELAND; WASHINGTON; ALLEGHENY.

6. *SCROPHULARIA* L.

Corolla dull without: sterile filament deep purple.

1. *S. Marylandica*.

Corolla lustrous without: sterile filament greenish yellow.

2. *S. leporella*.

1. *Scrophularia Marylandica* L. MARYLAND FIGWORT. (Man. p. 822; I. F. f. 3242.) In woods and thickets, Me. to S. Dak., N. C., Ga. and Tenn.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

2. *Scrophularia leporella* Bicknell. HARE FIGWORT. (Man. p. 822; I. F. f. 3243.) In woods and along roadsides, Vt. to Conn., Minn., Va. and Kans.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS.

7. CHELONE L.

1. *Chelone glabra* L. SNAKE-HEAD. TURTLE-HEAD. (Man. p. 823; I. F. f. 3244.) In swamps and along streams Newf. to Fla., Man. and Kans.—*Pennsylvania*: NORTHAMPTON; MONROE; LUZERNE; BUCKS; DELAWARE; CHESTER; MONTGOMERY; LYCOMING; LACKAWANNA; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

8. PENTSTEMON Soland.

Stem pubescent with spreading hairs.

1. *P. hirsutus*.

Stem glabrous below the inflorescence.

Corolla white, mostly over 2.5 cm. long, the tube abruptly enlarged.

2. *P. Digitalis*.

Corolla purplish, mostly less than 2 cm. long, the tube gradually enlarged.

3. *P. Pentstemon*.

1. *Pentstemon hirsutus* (L.) Willd. HAIRY BEARD-TONGUE. (Man. p. 824; I. F. f. 3247.) In dry woods and thickets, Me. to Ont., Man., Fla., Minn. and Tex.—*Pennsylvania*: LUZERNE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Pentstemon Digitalis* (Sweet) Nutt. FOXGLOVE BEARD-TONGUE. (Man. p. 825; I. F. f. 3251.) In fields and thickets, Me. to Ill., Kans., Va. and Ark.—*Pennsylvania*: MONROE; LANCASTER.

3. *Pentstemon Pentstemon* (L.) Britton. SMOOTH BEARD-TONGUE. (Man. p. 825; I. F. f. 3252.) In woods and thickets, N. Y. to Fla., Ky. and La.—*Pennsylvania*: BUCKS; FRANKLIN; FAYETTE; WESTMORELAND; ALLEGHENY.

9. PAULOWNIA Sieb. & Zucc.

1. *Paulownia tomentosa* (Thunb.) Baill. PAULOWNIA. (Man. p. 827; I. F. f. 3264.) Escaped from cultivation, N. Y. and N. J. to D. C. and Ga.—*Pennsylvania*: PHILADELPHIA; LANCASTER.

10. MIMULUS L.

Corolla blue or violet, or rarely white.

Calyx shorter than the pedicel: leaf-blades sessile and partly clasping.

1. *M. ringens*.

Calyx longer than the pedicel: leaf-blades petioled.

2. *M. alatus*.

Corolla yellow.

3. *M. moschatus*.

1. *Mimulus ringens* L. SQUARE-STEMMED MONKEY-FLOWER. (Man. p. 827; I. F. f. 3265.) In swamps and along streams, N. S. to Va., Tenn., Neb. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; COLUMBIA; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Mimulus alatus* Soland. SHARP-WINGED MONKEY-FLOWER. (Man. p. 827; I. F. f. 3266.) In swamps, Ont. to Conn., Ill., Ga., Kans., and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; HUNTINGDON.

3. *Mimulus moschatus* Dougl. MUSK-FLOWER. MUSK-PLANT. (Man. p. 828; I. F. f. 3269.) In wet places, N. S. and Ont. to N. Y. Adv. from the Pacific Coast. *Pennsylvania*: PHILADELPHIA, rocks near Manayunk.

11. *LIMOSELLA* L.

1. *Limosella aquatica* L. MUDWEED. MUDWORT. (Man. p. 831; I. F. f. 3283.) On muddy shores and in brooks, Lab. and Hudson Bay to the N. W. Terr., Colo. and Calif. Also in Eu., Australia and S. Am.—*Pennsylvania*: PHILADELPHIA; DELAWARE.

12. *CONOBEEA* Aubl.

1. *Conobea multifida* (Michx.) Benth. CONOBEEA. (Man. p. 828; I. F. f. 3270.) Along streams and rivers, Ohio to Iowa, Kans., Ky. and Tex. Introd. eastward.—*Pennsylvania*: PHILADELPHIA, on or near ballast.

13. *GRATIOLA* L.

Staminodia wanting or mere scales: corolla yellowish white.

1. *G. Virginiana*.

Staminodia conspicuous, with capitate tips: corolla golden yellow.

2. *G. aurea*.

1. *Gratiola Virginiana* L. CLAMMY HEDGE-HYSSOP. (Man. p. 829; I. F. f. 3275.) In wet places, Quebec to B. C., Mass., Fla., Tex. and Calif.—*Pennsylvania*: LUZERNE; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

2. *Gratiola aurea* Muhl. GOLDEN HEDGE-HYSSOP. (Man. p. 830; I. F. f. 3277.) In sandy wet places, Quebec and Ont. to N. J. and Fla.—*Pennsylvania*: MONROE, Water Gap; NORTHAMPTON, on Delaware, Bethlehem; BUCKS, Bristol.

14. *ILYSANTHES* Raf.

1. *Ilysanthes dubia* (L.) Barnh. LONG-STALKED FALSE PIMPERNEL. (Man. p. 830; I. F. f. 3280.) In wet places, N. Eng. to Fla., Ont., S. Dak. and Tex. Also on the Pacific Coast.—*Pennsylvania*: MONROE; LUZERNE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; DAUPHIN; FRANKLIN; HUNTINGDON; ALLEGHENY.

15. *MICRANTHEMUM* Michx.

1. *Micranthemum micranthemoides* (Nutt.) Wettst. NUTTALL'S MICRANTHEMUM. (Man. p. 831; I. F. f. 3282.) In tidal mud, N. J. and Pa. to Fla. Also in Cuba.—*Pennsylvania*: PHILADELPHIA; DELAWARE.

16. *VERONICA* L.

A. Flowers in axillary racemes: bracts very different from the leaves.

Plants mainly glabrous, sometimes slightly glandular above, or obscurely strigillose in *V. scutellata*: partly aquatic species.

Leaf-blades ovate or oval to ovate-lanceolate: capsule slightly flattened.

Blades of the stem-leaves sessile and partly clasping, entire or obscurely toothed.

1. *V. Anagallis-aquatica*.

Blades of the stem-leaves petioled, distinctly serrate.

2. *V. Americana*.

Leaf-blades linear or narrowly linear-lanceolate : capsule very flat.

3. *V. scutellata*.

Plants copiously pubescent : dry-soil species.

Calyx longer than the pedicel : corolla 4-6 mm. broad ; leaf-blades finely toothed, petioled.

4. *V. officinalis*.

Calyx shorter than the pedicel : corolla 6-8 mm. broad : leaf-blades coarsely toothed, sessile.

5. *V. Chamaedrys*.

B. Flowers axillary to leaf-like bracts, sometimes collected into terminal racemes.

Pedicels shorter than the subtending bracts.

Plants perennial : capsules merely retuse or truncate.

6. *V. serpyllifolia*.

Plants annual : capsules deeply notched.

Foliage glabrous or glandular.

7. *V. peregrina*.

Foliage pubescent.

8. *V. arvensis*.

Pedicels longer than the subtending bracts at maturity.

Leaf-blades ovate to oblong, toothed.

Capsule barely broader than high : calyx about as long as the corolla.

9. *V. agrestis*.

Capsule about twice as broad as high : calyx much shorter than the corolla.

10. *V. Byzantina*.

Leaf-blades orbicular to reniform, lobed.

11. *V. hederaefolia*.

1. *Veronica Anagallis-aquatica* L. WATER SPEEDWELL OR PIMPERNEL. (Man. p. 832 ; I. F. f. 3287.) In brooks and swamps, N. S. to B. C., N. C., Pa., Va., Neb. and N. Mex. Also in Eu. and Asia.—*Pennsylvania* : NORTHAMPTON, on the Delaware above Easton.

2. *Veronica Americana* Schwein. AMERICAN BROOKLIME. (Man. p. 833 ; I. F. f. 3288.) In brooks and swamps, Anticosti to Alaska, Pa., Neb., N. Mex. and Calif.—*Pennsylvania* : LUZERNE ; NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; PHILADELPHIA ; LANCASTER ; DAUPHIN ; LEBANON ; FRANKLIN ; HUNTINGDON ; ALLEGHENY.

3. *Veronica scutellata* L. MARSH OR SKULLCAP SPEEDWELL. (Man. p. 833 ; I. F. f. 3289.) In swamps, Lab. to B. C., N. Y., Minn. and Calif. Also in Eu. and Asia.—*Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; PHILADELPHIA ; CHESTER ; LANCASTER ; HUNTINGDON ; ALLEGHENY.

4. *Veronica officinalis* L. COMMON SPEEDWELL. (Man. p. 833 ; I. F. f. 3290.) In dry fields and woods, N. S. to Ont., S. Dak., N. C. and Tenn. Also in Europe and Asia.—*Pennsylvania* : PIKE ; MONROE ; NORTHAMPTON ; BUCKS ; PHILADELPHIA ; DELAWARE ; CHESTER ; LANCASTER ; SOMERSET ; ALLEGHENY.

5. *Veronica Chamaedrys* L. GERMANDER SPEEDWELL. (Man. p. 833 ; I. F. f. 3291.) In fields and waste places, N. S. and Quebec to N. Y. and Pa. Nat. from Eu.—*Pennsylvania* : PHILADELPHIA, ballast.

6. *Veronica serpyllifolia* L. THYME-LEAVED SPEEDWELL. (Man. p. 833 ; I. F. f. 3293.) In fields and thickets, Lab. to Alaska, Ga., N. Mex. and Calif. Also in Eu., Asia and S. Am.—*Pennsylvania* : MON-

ROE; NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

7. *Veronica peregrina* L. PURSLANE SPEEDWELL. NECKWEED. (Man. p. 834; I. F. f. 3294.) In moist and cultivated soil, N. S. to B. C., Fla., Mex. and Calif. Also in Cent. and S. Am. and in the Old World.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

8. *Veronica arvensis* L. CORN OR WALL SPEEDWELL. (Man. p. 834; I. F. f. 3295.) In cultivated soil, N. S. to Ont. and Wash., Fla., Kans. and Tex. Nat. from Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

9. *Veronica agrestis* L. FIELD OR GARDEN SPEEDWELL. (Man. p. 834; I. F. f. 3296.) In fields and waste places, N. S. to N. J. and La. Nat. from Eu.—*Pennsylvania*: MONROE; LANCASTER; BUCKS.

10. *Veronica Byzantina* (Sibth. & Smith.) B.S.P. BUXBAUM'S SPEEDWELL. (Man. p. 834; I. F. f. 3297.) In waste places, N. S. to N. Y. and Ohio. Adv. or nat. from Eu.—*Pennsylvania*: LANCASTER.

11. *Veronica hederæfolia* L. IVY-LEAVED SPEEDWELL. (Man. p. 834; I. F. f. 3298.) In thickets, fields and waste places, N. Y., Pa. and N. J. to S. C. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; DELAWARE; CHESTER; LANCASTER.

17. LEPTANDRA Nutt.

1. *Leptandra Virginica* (L.) Nutt. CULVER'S-ROOT. (Man. p. 834; I. F. f. 3299.) In meadows, moist woods and thickets, N. S. to B. C., Ala., Mo. and Kans.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; CENTRE; ALLEGHENY.

18. DASYSTOMA Raf.

Plants annual or biennial: corolla pubescent or glandular without.

1. *D. Pedicularia*.

Plants perennial: corolla glabrous without.

Stem manifestly pubescent or puberulent.

2. *D. flava*.

Stem glabrous, sometimes glaucous.

Leaf-blades entire, repand or incised: stem green.

3. *D. laevigata*.

Leaf-blades 1-2-pinnatifid: stem glaucous.

4. *D. Virginica*.

1. *Dasystoma Pedicularia* (L.) Benth. FERN-LEAVED FALSE FOXGLOVE. (Man. p. 836; I. F. f. 3303.) In dry woods and thickets, Me. to Minn., Fla. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; MONTGOMERY; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Dasystoma flava* (L.) Wood. DOWNY FALSE FOXGLOVE. (Man. p. 836; I. F. f. 3304.) In dry woods and thickets, Mass. to Ont., Wis., Ga. and Miss.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; MONTGOMERY; LANCASTER; SCHUYLKILL; COLUMBIA; FRANKLIN; HUNTINGDON; ALLEGHENY.

3. *Dasystoma laevigata* Raf. ENTIRE-LEAVED FALSE FOXGLOVE. (Man. p. 837; I. F. f. 3306.) In dry thickets, Pa. to Mich., south to Ga.—*Pennsylvania*: YORK; FRANKLIN; BEDFORD; HUNTINGDON.

4. *Dasystoma Virginica* (L.) Britton. SMOOTH FALSE FOXGLOVE. (Man. p. 837; I. F. f. 3307.) In dry or moist woods, Me. to Minn., Fla. and Ill.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER.

19. *GERARDIA* L.

Anthers equal: leaf-blades not auricled.

Pedicle mainly shorter than the calyx, or the calyx and the capsule.

Corolla 2 cm. long or longer.

1. *G. purpurea*.

Corolla 1.5 cm. long or shorter.

2. *G. paupercula*.

Pedicle much longer than the calyx and capsule.

Leaf-blades narrowed upward: corolla rose-purple.

3. *G. tenuifolia*.

Leaf-blades broadened upward: corolla pink.

4. *G. Skinneriana*.

Anthers of 2 kinds: leaf-blades, at least the upper ones, auricled at the base.

5. *G. auriculata*.

1. *Gerardia purpurea* L. LARGE PURPLE GERARDIA. (Man. p. 838; I. F. f. 3310.) In moist fields and meadows, Me. and southern Ont. to Fla., mostly near the coast.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN.

2. *Gerardia paupercula* (A. Gray) Britton. SMALL-POWERED GERARDIA. (Man. p. 838; I. F. f. 3311.) In bogs and low meadows, Quebec to N. J., Man. and Wis.—*Pennsylvania*: NORTHAMPTON; BUCKS; ERIE; DELAWARE.

3. *Gerardia tenuifolia* Vahl. SLENDER GERARDIA. (Man. p. 838; I. F. f. 3313.) In dry woods and thickets, Quebec to Ga., Ont., Kans. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; COLUMBIA; FRANKLIN; HUNTINGDON; CENTRE; ALLEGHENY.

4. *Gerardia Skinneriana* Wood. SKINNER'S GERARDIA. (Man. p. 839; I. F. f. 3315.) In dry sandy woods and thickets, Mass. to Fla., Minn., Kans. and La.—*Pennsylvania*: LANCASTER, New Texas.

5. *Gerardia auriculata* Michx. AURICLED GERARDIA. (Man. p. 839; I. F. f. 3316.) In moist open soil, Pa. to Minn., N. C. and Kans.—*Pennsylvania*: BUCKS; CHESTER.

20. *BUCHNERA* L.

1. *Buchnera Americana* L. BLUE-HEARTS. (Man. p. 835; I. F. f. 3301.) In sandy or gravelly soil, N. J. to western N. Y., Minn., Va., La., Kans. and Ark.—*Pennsylvania*: DELAWARE; LANCASTER.

21. *CASTILLEJA* Mutis.

1. *Castilleja coccinea* (L.) Spreng. SCARLET PAINTED CUP. (Man. p. 839; I. F. f. 3318.) In meadows and thickets, Me. and Ont. to Man., N. C., Kans. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; CENTRE; ALLEGHENY.

22. MELAMPYRUM L.

1. *Melampyrum lineare* Lam. NARROW-LEAVED COW-WHEAT. (Man. p. 845; I. F. *f.* 3340.) In dry woods and thickets, N. S. to B. C., N. C., Ky. and Minn.—*Pennsylvania*: PIKE; MONROE; LUZERNE; SCHUYLKILL; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; HUNTINGDON.

23. PEDICULARIS L.

Leaf-blades shallowly pinnatifid or toothed: capsules ovoid, little longer than the calyx. 1. *P. lanceolata*.

Leaf-blades pinnately parted: capsule linear-lanceolate, thrice as long as the calyx. 2. *P. Canadensis*.

1. *Pedicularis lanceolata* Michx. SWAMP LOUSEWORT. (Man. p. 843; I. F. *f.* 3334.) In swamps, Ont. to Conn., Va., Man., Minn., Ohio, Mich. and Neb.—*Pennsylvania*: MONROE; BUCKS; DELAWARE; CHESTER; LUZERNE; LANCASTER; HUNTINGDON.

2. *Pedicularis Canadensis* L. WOOD BETONY. LOUSEWORT. (Man. p. 844; I. F. *f.* 3335.) In dry woods and thickets, N. S. to Man., Fla., Miss., Colo. and northern Mex.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; MONTGOMERY; SOMERSET; CRAWFORD; ERIE; ALLEGHENY.

FAMILY II. LENTIBULARIACEAE Lindl. BLADDERWORT FAMILY.

1. UTRICULARIA L.

Scapes erect from rooting bases: leaves simple, entire: bladders few or none. Corolla yellow, over 15 mm. broad. 1. *U. cornuta*.

Corolla purple, less than 12 mm. broad. 2. *U. resupinata*.

Scapes emersed, from wholly or partly free-swimming leafy stems: leaf-blades finely divided, bladder-bearing.

Flowering stems bearing a whorl of leaves with inflated petioles and dissected blades. 3. *U. inflata*.

Flowering stems leafless or merely scaly.

Stem-leaves whorled.

4. *U. purpurea*.

Stem-leaves merely crowded, or remote.

Leaf-blades 2-3-pinnately divided: leaves crowded. 5. *U. vulgaris*.

Leaf-blades dichotomously divided: leaves scattered.

Plants bearing cleistogamous flowers among the leaves.

6. *U. clandestina*.

Plants destitute of cleistogamous flowers.

Bladders borne mainly or wholly on leafless branches.

7. *U. intermedia*.

Bladders borne among the leaves.

8. *U. gibba*.

1. *Utricularia cornuta* Michx. HORNED BLADDERWORT. (Man. p. 846; I. F. *f.* 3342.) On borders of ponds, or in bogs, Newf. to Ont., Minn., Fla. and Tex.—*Pennsylvania*: PIKE; MONROE; LACKAWANNA; ERIE; SUSQUEHANNA.

2. *Utricularia resupinata* B. D. Greene. REVERSED BLADDERWORT. (Man. p. 846; I. F. f. 3344.) In sandy bogs and borders of ponds, Me. to Fla., west to Mich.—*Pennsylvania*: ERIE, Presque Isle.

3. *Utricularia inflata* Walt. SWOLLEN BLADDERWORT. (Man. p. 846; I. F. f. 3347.) In ponds, Can., Me. to Fla. and Tex., mainly near the coast.—*Pennsylvania*: BUCKS, Bristol.

4. *Utricularia purpurea* Walt. PURPLE BLADDERWORT. (Man. p. 847; I. F. f. 3348.) In ponds, Me. to Fla., mainly near the coast; also in Ind. — *Pennsylvania*: CARBON, Great Lake.

5. *Utricularia vulgaris* L. GREATER BLADDERWORT. (Man. p. 847; I. F. f. 3349.) In brooks and ponds, Newf. to Fla., B. C. and Calif. Also in Eu., Asia, Cuba and Mex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; LANCASTER; ERIE, Presque Isle; BEAVER.

6. *Utricularia clandestina* Nutt. HIDDEN-FRUITED BLADDERWORT. (Man. p. 847; I. F. f. 3350.) In shallow ponds, N. B. to Pa. and N. J. — *Pennsylvania*: WAYNE; MONROE; HUNTINGDON; CRAWFORD; ERIE, Presque Isle.

7. *Utricularia intermedia* Hayne. FLAT-LEAVED BLADDERWORT. (Man. p. 847; I. F. f. 3351.) In shallow water, Cape Breton to B. C., N. J., Minn. and Calif. Also in Eu.—*Pennsylvania*: NORTHAMPTON; TIOGA; BUCKS; ERIE, Presque Isle.

8. *Utricularia gibba* L. HUMPED BLADDERWORT. (Man. p. 847; I. F. f. 3354.) In shallow water, Ont. to Me., Mich., Ala. and Ill.—*Pennsylvania*: BUCKS; LANCASTER; YORK; LUZERNE; FRANKLIN.

FAMILY 12. OROBANCHACEAE Lindl. BROOM-RAPE FAMILY.

Flowers perfect and complete throughout.

Calyx regular or essentially so, with 2-5 teeth.

Calyx-lobes nearly equal: bractlets wanting.

Calyx-lobes unequal: bractlets present.

Calyx irregular, spathe-like, the lower side split, the upper with 3-4 teeth.

1. THALESIA.

2. OROBANCHE.

3. CONOPHOLIS.

Flowers various, cleistogamous on the lower part of the spike, complete but mostly sterile above.

4. LEPTAMNIUM.

1. THALESIA Raf.

1. *Thalesia uniflora* (L.) Britton. ONE-FLOWERED BROOM-RAPE. CANCER-ROOT. (Man. p. 849; I. F. f. 3358.) In woods and thickets, Newf. to B. C., Va., Ohio, Tex. and Calif.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; SOMERSET; ALLEGHENY.

2. OROBANCHE L.

1. *Orobanche minor* J. E. Smith. LESSER OR CLOVER BROOM-RAPE. (Man. p. 849; I. F. f. 3361.) Parasitic on the roots of clover, N. J. and Pa. to Va. Nat. from Eu. — *Pennsylvania*: NORTHAMPTON.

3. CONOPHOLIS Wallr.

1. *Conopholis Americana* (L. f.) Wallr. SQUAW-ROOT. (Man. p. 850; I. F. f. 3363.) In rich woods at bases of trees, Can. (?), Me. to Mich. and Fla.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; SOMERSET; COLUMBIA; MERCER; ALLEGHENY.

4. LEPTAMNIUM Raf.

1. *Leptamnium Virginianum* (L.) Raf. BEECH-DROPS. (Man. p. 850; I. F. f. 3364.) In beech woods, N. B. to Fla., Ont., Mich., Mo. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; VENANGO; ERIE; ALLEGHENY.

FAMILY 13. BIGNONIACEAE Pers. TRUMPET-CREEPER FAMILY.

Leaf-blades compound: vines or rarely herbaceous shrubs.

Calyx with an undulate edge: capsule flattened parallel with its partition.

1. BIGNONIA.

Calyx with 5 lobes: capsule flattened at right angles with its partition.

2. TECOMA.

Leaf-blades simple: trees.

3. CATALPA.

1. BIGNONIA L.

1. *Bignonia crucigera* L. TENDRILLED TRUMPET-FLOWER. (Man. p. 851; I. F. f. 3365.) In moist woods, Va. to Fla., La., Ohio and Ill.—*Pennsylvania*: Reported from the lower Susquehanna.

2. TECOMA Juss.

1. *Tecoma radicans* (L.) DC. TRUMPET-FLOWER OR -CREEPER. (Man. p. 851; I. F. f. 3366.) In moist woods and thickets, N. J. and Pa. to Fla., Tex., Kans. and Ill. Escaped further north.—*Pennsylvania*: BUCKS; LANCASTER; FAYETTE; ALLEGHENY.

3. CATALPA Scop.

1. *Catalpa Catalpa* (L.) Karst. CATALPA. INDIAN BEAN. (Man. p. 852; I. F. f. 3367.) Escaped northward as far as Pa. and southern N. Y.—*Pennsylvania*: LEHIGH; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; LANCASTER; ALLEGHENY.

FAMILY 14. MARTYNIACEAE Link. UNICORN-PLANT FAMILY.

1. MARTYNIA L.

1. *Martynia Louisiana* Mill. UNICORN-PLANT. (Man. p. 853; I. F. f. 3369.) In waste places, escaped, Me. to N. J. and N. C. Native from Iowa, Ill. and Kans., southward.—*Pennsylvania*: BUCKS; DAUPHIN.

FAMILY 15. ACANTHACEAE J. St. Hil. ACANTHUS FAMILY.

Androecium of 4 stamens: corolla nearly regular, convolute in the bud.

1. RUELLIA.

Androecium of 2 stamens: corolla 2-lipped, imbricated in the bud.

2. DIANTHERA.

1. RUELLIA L.

Calyx-lobes linear-lanceolate : capsule rather longer than the calyx.

1. *R. strepens*.

Calyx-lobes linear-filiform : capsule shorter than the calyx.

2. *R. ciliosa*.

1. *Ruellia strepens* L. SMOOTH RUELLIA. (Man. p. 854; I. F. f. 3371.) In dry woods, Pa. to Wis., Fla. and Tex.—*Pennsylvania* : NORTHAMPTON; LANCASTER; FRANKLIN.

1a. *R. strepens micrantha* (Engelm. & Gray) Britton. (Man. p. 854.) Range of type. FRANKLIN.

2. *Ruellia ciliosa* Pursh. HAIRY RUELLIA. (Man. p. 854; I. F. f. 3372.) In dry soil, N. J. and Pa. to Fla., Mich., Kans. and La.—*Pennsylvania* : FRANKLIN.

2. DIANTHERA L.

1. *Dianthera Americana* L. DENSE-FLOWERED WATER WILLOW. (Man. p. 855; I. F. f. 3374.) In water and wet places, Ont. to Mich., Kan., Ga. and Tex.—*Pennsylvania* : BUCKS; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; MIFFLIN; HUNTINGDON; BRADFORD; LUZERNE; CAMBRIA; ALLEGHENY.

Order 6. PLANTAGINALES.

FAMILY I. PLANTAGINACEAE Lindl. PLANTAIN FAMILY.

1. PLANTAGO L.

Plants acaulescent : flowers in terminal spikes.

Corolla-lobes reflexed or spreading in fruit, not converging over the top of the pyxis.

Leaves with widely dilated blades.

Seeds several or many in each pyxis.

Pyxis ovoid, circumscissile at about the middle. 1. *P. major*.

Pyxis oblong, circumscissile much below the middle.

2. *P. Rugelii*.

Seeds 2-4 in each pyxis.

Flowers or flower-clusters contiguous : leaf-blades narrow to the base parallel-ribbed. 3. *P. lanceolata*.

Flowers or flower-clusters separated : leaf-blades, at least some of them, cordate, not parallel-ribbed. 4. *P. cordata*.

Leaves with linear blades. 5. *P. aristata*.

Corolla-lobes erect and converging over the top of the pyxis.

Stamens 4 : leaf-blades spatulate to oblong or obovate. 6. *P. Virginica*.

Stamens 2 : leaf-blades linear-filiform.

Pyxis slightly longer than the calyx, about 4-seeded. 7. *P. elongata*.

Pyxis twice as long as the calyx, 8-20-seeded. 8. *P. heterophylla*.

Plants caulescent : flowers terminating axillary peduncles. 9. *P. arenaria*.

1. *Plantago major* L. COMMON PLANTAIN. (Man. p. 857; I. F. f. 3378.) In waste places, nearly throughout N. Am. Mostly nat. from Eu.—*Pennsylvania* : NORTHAMPTON; BUCKS; DELAWARE; CHESTER; SUSQUEHANNA; ERIE, Presque Isle; ALLEGHENY.

2. *Plantago Rugelii* Dec. RUGEL'S PLANTAIN. (Man. p. 857; I. F. f. 3379.) In fields, woods and waste places, Me. and Ont. to S. Dak.,

Fla., Neb. and Tex.—*Pennsylvania*: NORTHAMPTON; MONROE; BUCKS; CHESTER; PIKE; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; SUSQUEHANNA; ALLEGHENY.

3. *Plantago lanceolata* L. RIBWORT. RIB-GRASS. (Man. p. 857; I. F. f. 3380.) In fields and waste places, N. B. to the N. W. Terr., B. C., Fla. and Kans. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

4. *Plantago cordata* Lam. HEART-LEAVED OR WATER PLANTAIN. (Man. p. 858; I. F. f. 3384.) In swamps and along streams, N. Y. to Ala., Mo. and La.—*Pennsylvania*: BEDFORD.

5. *Plantago aristata* Michx. LARGE-BRACTED PLANTAIN. (Man. p. 859; I. F. f. 3387.) On dry plains and prairies, Ill. to La. and Tex., S. Dak., B. C. and N. Mex. Adv. as weed in the eastern States from Me. to Ga.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE, Tinicum; ALLEGHENY.

6. *Plantago Virginica* L. DWARF OR WHITE DWARF PLANTAIN. (Man. p. 859; I. F. f. 3388.) In dry soil, Conn. to Fla., Ill., Mo., Ariz. and Mex.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; LAFAYETTE; ALLEGHENY.

7. *Plantago elongata* Pursh. SLENDER PLANTAIN. (Man. p. 859; I. F. f. 3389.) In dry sandy soil, Conn. to N. Y., Va., La., Ill., S. Dak. and Tex.—*Pennsylvania*: PHILADELPHIA.

8. *Plantago heterophylla* Nutt. MANY-SEEDED PLANTAIN. (Man. p. 859; I. F. f. 3390.) In moist soil, N. J. to Fla., Tenn., Tex. and Calif.—*Pennsylvania*: PHILADELPHIA, ballast.

9. *Plantago arenaria* W. & K. SAND PLANTAIN. (Man. p. 859; I. F. f. 3391.) Eastern United States. Adv. or fugitive from Eu.—*Pennsylvania*: PHILADELPHIA, Mifflin St. wharf.

Order 7. RUBIALES.

Leaves with stipules.

Fam. 1. RUBIACEAE.

Leaves without stipules.

Fam. 2. CAPRIFOLIACEAE.

FAMILY I. RUBIACEAE B. Juss. Madder Family.

Leaves merely opposite by pairs (rarely in whorls of 3 in *Cephalanthus*).

Ovules and seeds several or many in each cavity of the ovary.

1. HOUSTONIA.

Ovules and seeds solitary in each cavity of the ovary.

Shrubs or trees: flowers in dense, globular heads.

2. CEPHALANTHUS.

Herbs: flowers axillary to leaf-like bracts.

Flowers 2 together, with their ovaries united: fruit drupaceous.

3. MITCHELLA.

Flowers with their ovaries distinct: fruit of 2 dry carpels.

4. DIODIA.

Leaves apparently whorled, the stipules foliaceous.

Corolla rotate: sepals minute or obsolete.

5. GALIUM.

Corolla funnellform: sepals prominent.

6. SHERARDIA.

1. **HOUSTONIA** L.

Peduncles or pedicels solitary or essentially so, terminal or lateral.

Plants erect : sepal lanceolate : corolla-tube glabrous within.

1. *H. coerulea*.

Plants diffusely spreading and creeping : sepals oblong : corolla-tube pubescent within.

2. *H. serpyllifolia*.

Peduncles or pedicels in more or less effuse cymes.

Leaf-blades, especially those of the basal leaves, conspicuously ciliate.

3. *H. ciliolata*.

Leaf-blades not ciliate.

4. *H. longifolia*.

1. **Houstonia coerulea** L. BLUETS. INNOCENCE. (Man. p. 861; I. F. f. 3393.) In open grassy places or on wet rocks, N. S. to Quebec, Mich., Ga. and Ala.—*Pennsylvania* : MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; YORK; SCHUYLKILL; FRANKLIN; HUNTINGDON; CLARION; CAMBRIA.

2. **Houstonia serpyllifolia** Michx. THYME-LEAVED BLUETS. (Man. p. 861; I. F. f. 3394.) Mountains of Pa., Va. and W. Va. to S. C. and Tenn.—*Pennsylvania* : SOMERSET, Negro Mt.; FAYETTE.

3. **Houstonia ciliolata** Torr. FRINGED HOUSTONIA. (Man. p. 862; I. F. f. 3398.) On rocks and shores, Me. (?), Ont. to Mich., Pa., W. Va., Ky. and Ark.—*Pennsylvania* : ALLEGHENY; WASHINGTON.

4. **Houstonia longifolia** Gaertn. LONG-LEAVED HOUSTONIA. (Man. p. 862; I. F. f. 3399.) In dry open places, Me. and Ont. to Man., Ga. and Mo.—*Pennsylvania* : NORTHAMPTON; BUCKS; CHESTER; BERKS; LANCASTER; FRANKLIN; HUNTINGDON; CLARION.

2. **CEPHALANTHUS** L.

1. **Cephalanthus occidentalis** L. BUTTON-BUSH. (Man. p. 863; I. F. f. 3403.) In swamps and low grounds, N. B. to Ont., Wis., Neb., Fla. and Tex.—*Pennsylvania* : NORTHAMPTON; BUCKS; CHESTER; DELAWARE; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; ERIE.

3. **MITCHELLA** L.

1. **Mitchella repens** L. PARTRIDGE-BERRY. TWIN-BERRY. (Man. p. 863; I. F. f. 3404.) In woods, N. S. to Fla., Ont., Minn., Ark. and Tex.—*Pennsylvania* : MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; TIOGA.

4. **DIODIA** L.

1. **Diodia teres** Walt. ROUGH BUTTON-WEED. (Man. p. 864; I. F. f. 3406.) In dry or sandy soil, Conn. to Fla., Ill., Kans., Tex., N. Mex. and Sonora.—*Pennsylvania* : NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER.

5. **GALIUM** L.

A. Plants annual (except *G. verum* and *G. Mollugo*).

Corolla yellow.

1. *G. verum*.

Corolla white or greenish white.

Fruit smooth and glabrous.

2. *G. Mollugo*.

Fruit bristly.

3. *G. Aparine*.

B. Plants perennial.

Fruit bristly or becoming glabrous in *G. boreale*.

Leaves in whorls of 4.

Leaf-blades 1-nerved.

4. *G. pilosum*.

Leaf-blades 3-nerved.

Leaf-blades lanceolate, ovate-lanceolate or oblong.

Upper leaves with lanceolate blades.

5. *G. lanceolatum*.

Upper leaves with oblong or ovate-lanceolate blades.

6. *G. circaezans*.

Leaf-blades linear or linear-lanceolate.

7. *G. boreale*.

Leaves in whorls of 6.

8. *G. triflorum*.

Fruit smooth and glabrous.

Corolla brown-purple.

9. *G. latifolium*.

Corolla white, greenish or yellowish.

Endosperm of the seed annular in cross-section.

Corolla-lobes 4, acute : stems smooth or nearly so.

10. *G. tinctorium*.

Corolla-lobes 3, obtuse : stems retrorsely hispid.

Leaves mostly in 4's : pedicels slender, rough.

11. *G. trifidum*.

Leaves mostly in 5's or 6's : pedicels stout, smooth.

12. *G. Claytonii*.

Endosperm of the seed lunate in cross-section.

Stem smooth or essentially so.

13. *G. concinnum*.

Stem retrorsely hispid.

14. *G. asprellum*.

1. *Galium verum* L. YELLOW OR LADY'S BEDSTRAW. (Man. p. 865; I. F. f. 3408.) In waste places and fields, Ont. to Mass., Pa. and N. J. Adv. or nat. from Eu.—*Pennsylvania* : BUCKS; PHILADELPHIA.

2. *Galium Mollugo* L. WILD MADDER. (Man. p. 865; I. F. f. 3409.) In fields and waste places, Newf. to Vt., Pa., N. J. and Del. Adv. or nat. from Eu.—*Pennsylvania* : TIOGA; NORTHAMPTON; BUCKS.

3. *Galium Aparine* L. CLEAVERS. GOOSEGRASS. (Man. p. 865; I. F. f. 3412.) In various situations, N. B. to S. Dak., Fla., Mo. and Tex. Nat. from Eu.—*Pennsylvania* : PIKE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN.

4. *Galium pilosum* Ait. HAIRY BEDSTRAW. (Man. p. 866; I. F. f. 3415.) In dry or sandy soil, Mass. to Ind., Kans., Fla. and Tex.—*Pennsylvania* : PIKE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

5. *Galium lanceolatum* Torr. TORREY'S WILD LIQUORICE. (Man. p. 866; I. F. f. 3416.) In dry woods, Quebec and Ont. to Minn., N. J., Va., and Mich.—*Pennsylvania* : NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; BERKS; LUZERNE; ALLEGHENY.

6. *Galium circaezans* Michx. WILD LIQUORICE. (Man. p. 866; I. F. f. 3417.) In woods, Quebec to Minn., Fla., Kans. and Tex.—*Pennsylvania* : NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; FRANKLIN; LUZERNE; HUNTINGDON; ALLEGHENY.

7. *Galium boreale* L. NORTHERN BEDSTRAW. (Man. p. 866; I. F. f. 3419.) In rocky soil or along streams, Quebec to Alaska, N. J., Pa.,

Mich., Mo., Neb., N. Mex. and Calif. Also in Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; CHESTER; LANCASTER; HUNTINGDON; ALLEGHENY.

8. *Galium triflorum* Michx. SWEET-SCENTED BEDSTRAW. (Man. p. 866; I. F. f. 3420.) In woods, N. S. to Alaska, Fla., La., the Ind. Terr., Colo. and Calif. Also in Eu. and Asia.—*Pennsylvania*: BUCKS; MONTGOMERY; DELAWARE; CHESTER; SOMERSET.

9. *Galium latifolium* Michx. PURPLE BEDSTRAW. (Man. p. 867; I. F. f. 3421.) In dry woods, Pa. to Tenn. and Ga.—*Pennsylvania*: FRANKLIN.

10. *Galium tinctorium* L. STIFF MARSH BEDSTRAW. WILD Madder. (Man. p. 867; I. F. f. 3423.) Damp shady places, wet meadows and swamps, Can. to N. C., Tenn., Mich., Neb. and Ariz.—*Pennsylvania*: BUCKS; LANCASTER; LUZERNE.

11. *Galium trifidum* L. SMALL BEDSTRAW OR CLEAVERS. (Man. p. 867; I. F. f. 3424.) Sphagnous bogs and cold swamps, Me. to N. Y., Ohio, Neb., Colo. and northward.—*Pennsylvania*: ERIE, Presque Isle.

12. *Galium Claytonii* Michx. CLAYTON'S BEDSTRAW. (Man. p. 867; I. F. f. 3425.) Swamps, Mass. and N. Y. to Fla., Mich., Mo. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; LUZERNE; COLUMBIA; FULTON; ERIE.

13. *Galium concinnum* Torr. & Gray. SHINING BEDSTRAW. (Man. p. 868; I. F. f. 3427.) In dry woodlands, N. J. to Va., Minn., Kans. and Ark.—*Pennsylvania*: LANCASTER; YORK; HUNTINGDON; ALLEGHENY.

14. *Galium asprellum* Michx. ROUGH BEDSTRAW. (Man. p. 868; I. F. f. 3428.) In moist soil, Newf. to Ont., N. C., Ill., Wis. and Neb.—*Pennsylvania*: MONROE; LUZERNE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; FRANKLIN; ERIE.

6. SHERARDIA L.

1. *Sherardia arvensis* L. BLUE FIELD-MADDER. (Man. p. 868; I. F. f. 3430.) In waste places, Ont. and Mass. Also in Bermuda. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON, ore heaps at Bethlehem.

FAMILY 2. CAPRIFOLIACEAE Vent. HONEYSUCKLE FAMILY.

Corolla rotate or corn-shaped: stigmas 2-5-lobed, sessile.

Drupe berry-like, with 3-5 nutlets: leaves with pinnate-blades.

1. SAMBUCUS.

Drupe with a single nutlet: leaves with simple blades.

2. VIBURNUM.

Corolla tubular or tubular-campanulate, sometimes with a 2-lipped limb: style elongated.

Flowers solitary in the leaf-axils: upright herbs.

3. TRIOSTEUM.

Flowers in terminal or axillary sometimes congested cymes: shrubs, vines or creeping herbs.

Fruit baccate, rather dry in *Linnaea*, a creeping plant with geminate flowers.

Corolla regular or nearly so.

Flower-clusters long-peduncled : flowers in pairs.

4. LINNAEA.

Flower-clusters sessile or nearly so : flowers not in pairs.

5. SYMPHORICARPOS.

Corolla irregular, the limb more or less 2-lipped.

6. LONICERA.

Fruit capsular.

7. DIERVILLA.

1. SAMBUCUS L.

Fruit purple or black : cymes flat-topped, broad.

1. *S. Canadensis*.

Fruit red : cymes ovoid, fully as long as broad.

2. *S. pubens*.

1. ***Sambucus Canadensis* L.** AMERICAN OR SWEET ELDER. (Man. p. 869; I. F. f. 3432.) In moist soil, N. B. and N. S. to Fla., Man., Kans. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. ***Sambucus pubens* Michx.** RED-BERRIED ELDER. (Man. p. 869; I. F. f. 3433.) In rocky places, N. B. to Alaska, B. C., Ga., Colo. and Calif.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; LANCASTER; LUZERNE; BERKS; HUNTINGDON; TIOGA; SCHUYLKILL; YORK; ALLEGHENY.

2a. *S. pubens dissecta* Britton. (Man. p. 870.)—BLAIR.

2. VIBURNUM L.

Marginal flower of the cymes radiant, conspicuous : fruit red.

Leaf-blades doubly serrate, pinnately veined : fruit mostly over 10 mm. long.

1. *V. alnifolium*.

Leaf-blades lobed, palmately veined : fruit mostly less than 10 mm. long.

2. *V. Opulus*.

Marginal flowers of the cymes not radiant, no more conspicuous than the rest : fruit blue or black, except in *V. pauciflorum*.

Leaf-blades palmately veined or 3-ribbed.

Cymes with abbreviated rays : fruit red.

3. *V. pauciflorum*.

Cymes with elongated rays : fruit nearly black.

4. *V. acerifolium*.

Leaf-blades pinnately veined.

Cymes decidedly peduncled.

Leaf-blades coarsely dentate.

Leaves with sessile or very short-petioled blades. 5. *V. pubescens*.

Leaves with relatively long-petioled blades.

Lower surfaces of the leaf-blades glabrous or merely tufted in the axils.

6. *V. dentatum*.

Lower surfaces of the leaf-blades stellate-pubescent.

7. *V. molle*.

Leaf-blades entire or irregularly erose-crenulate.

Peduncles shorter than the cymes.

8. *V. cassinoides*.

Peduncles as long as the cymes or longer.

9. *V. nudum*.

Cymes sessile or nearly so.

Leaf-blades prominently acuminate.

10. *V. Lentago*.

Leaf-blades obtuse or merely acute.

11. *V. prunifolium*.

1. ***Viburnum alnifolium* Marsh.** HOBBLE-BUSH. (Man. p. 870; I. F. f. 3434.) In low woods, N. B. to N. C., western N. Y. and Mich.—*Pennsylvania*: MONROE; CENTRE; TIOGA; BLAIR; VENANGO; ERIE.

2. *Viburnum Opulus* L. CRANBERRY-TREE. (Man. p. 870; I. F. f. 3435.) In low grounds, N. B. to B. C., N. J., Mich., S. Dak. and Ore. Also in Europe and Asia.—*Pennsylvania*: MONROE; BERKS; HUNTINGDON; MERCER; SOMERSET; ERIE.

3. *Viburnum pauciflorum* Pylaie. FEW-FLOWERED CRANBERRY-TREE. (Man. p. 871; I. F. f. 3436.) In cold mountain woods, Newf. to Alaska, Me., N. H., Vt., Pa., Colo. and Wash.—*Pennsylvania*: ALLEGHENY.

4. *Viburnum acerifolium* L. MAPLE-LEAVED ARROW-WOOD. (Man. p. 871; I. F. f. 3437.) In dry woods, N. B. to N. C., Ont., Mich. and Minn.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; MONTGOMERY; FRANKLIN; FULTON; HUNTINGDON; ERIE; ALLEGHENY.

5. *Viburnum pubescens* (Ait.) Pursh. DOWNY-LEAVED ARROW-WOOD. (Man. p. 871; I. F. f. 3438.) In rocky woods, Quebec to Man., Ga., Ill., Iowa and Mich.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; FRANKLIN; HUNTINGDON; BLAIR; ALLEGHENY.

6. *Viburnum dentatum* L. ARROW-WOOD. (Man. p. 871; I. F. f. 3439.) In moist soil, N. B. to Ont., Ga., Mich. and Minn.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CHESTER; MONTGOMERY; FRANKLIN; HUNTINGDON; CENTRE; ERIE; PIKE; DELAWARE; FAYETTE.

7. *Viburnum molle* Michx. SOFT-LEAVED ARROW-WOOD. (Man. p. 871; I. F. f. 3440.) In low grounds, Pa., Ky. to Fla. and Tex.—*Pennsylvania*: BUCKS, Quakertown.

8. *Viburnum cassinoides* L. WITHE-ROD. APPALACHIAN TEA. (Man. p. 872; I. F. f. 3442.) In swamps and wet soil, Newf. to Man., N. J., Ga. and Ala.—*Pennsylvania*: LEBANON.

9. *Viburnum nudum* L. LARGER WITHE-ROD. (Man. p. 872; I. F. f. 3443.) In swamps, L. I. to Fla., Ky. and La.—*Pennsylvania*: BUCKS; MONTGOMERY; DELAWARE; CHESTER.

10. *Viburnum Lentago* L. NANNY-OR SHEEP-BERRY. (Man. p. 872; I. F. f. 3444.) In rich soil, Hudson Bay to Man., N. J., Ga., Kans., Ind. and Mo.—*Pennsylvania*: PIKE; NORTHAMPTON; BUCKS; MONROE; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; SUSQUEHANNA; CENTRE; ERIE; SOMERSET; ALLEGHENY.

11. *Viburnum prunifolium* L. BLACK HAW. SLOE. (Man. p. 872; I. F. f. 3445.) In dry soil, Conn. to S. C., Mich., Kans. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONROE; DELAWARE; CHESTER; LANCASTER; LEBANON; YORK; FRANKLIN; BEDFORD; HUNTINGDON; ALLEGHENY.

11a. *V. prunifolium globosum* Nash. (Man. p. 872.)—DELAWARE, Tinicum.

3. TRIOSTEUM L.

A. Leaf-blades of an ovate or oval type: corolla purplish or dull red.
Upper stem-leaves connate-perfoliate: fruit orange-yellow.

1. *T. perfoliatum*.

Upper stem-leaves merely sessile : fruit orange-red. 2. *T. aurantiacum*.
 B. Leaf-blades of a lanceolate or ovate-lanceolate type : corolla yellowish.

3. *T. angustifolium*.

1. *Triosteum perfoliatum* L. FEVER-WORT. HORSE GENTIAN. (Man. p. 873.) In rich soil, N. Y. to Minn., Ala., Ky. and Kans.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; SOMERSET ; ERIE.

2. *Triosteum aurantiacum* Bicknell. SCARLET-FRUITED HORSE-GENTIAN. (Man. p. 873 ; I. F. f. 3448.) In woods, Quebec to Minn., N. C., Ky. and Iowa.—*Pennsylvania* : LANCASTER.

3. *Triosteum angustifolium* L. YELLOW OR NARROW-LEAVED HORSE-GENTIAN. (Man. p. 873 ; I. F. f. 3449.) In rich soil, Conn. and L. I. to N. J., Pa., Ala., Ill., La.—*Pennsylvania* : BUCKS ; PHILADELPHIA ; CHESTER ; LANCASTER.

4. LINNAEA L.

1. *Linnaea Americana* Forbes. (Man. p. 873.) In cold woods, Newf. to Alaska, S. Dak., Colo. and Md., Pa., Mich., Utah.—*Pennsylvania* : SUSQUEHANNA ; WYOMING ; TIOGA, Hillsboro ; HUNTINGDON ; WAYNE ; SCHUYLKILL ; ERIE.

5. SYMPHORICARPOS Juss.

Style glabrous : fruit white.

Erect shrub : leaf-blades mostly over 2.5 cm. long : clusters several-flowered

1. *S. racemosus*.

Diffusely spreading shrub : leaf-blades mostly less than 2.5 cm. long : clusters 1-2-flowered.

2. *S. pauciflorus*.

Style pubescent : fruit red.

3. *S. Symphoricarpos*.

1. *Symphoricarpos racemosus* Michx. SNOWBERRY. (Man. p. 874 ; I. F. f. 3451.) In rocky places and on river shores, N. S. to B. C., Pa., Ky., S. Dak. and in Calif.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; WAYNE, escaped ; ALLEGHENY.

2. *Symphoricarpos pauciflorus* (Robbins) Britton. LOW SNOWBERRY. (Man. p. 874 ; I. F. f. 3452.) In rocky places, Ont. and Vt. to N. Y., Pa., S. Dak., B. C., Neb. and Colo.—*Pennsylvania* : HUNTINGDON.

3. *Symphoricarpos Symphoricarpos* (L.) MacM. CORAL-BERRY. (Man. p. 874 ; I. F. f. 3454.) Along rivers and in rocky places, N. J. and Pa. to western N. Y., Dak., Neb., Ga. and Tex.—*Pennsylvania* : NORTHAMPTON, escaped ; PHILADELPHIA ; BUCKS ; FRANKLIN, naturalized ; ALLEGHENY.

6. LONICERA L.

A. Flowers in whorls at or near the ends of the branches : bracts and usually some of the upper leaves connate-perfoliate.

Corolla-limb 2-lipped, the upper lip 4-lobed, the lower entire.

Corolla-tube glabrous within.

1. *L. Caprifolium*.

Corolla-tube pubescent within.

Leaf-blades pubescent at least beneath : corolla yellow, pubescent.

Corolla-tube slightly gibbous at the base : leaf-blades pubescent on both sides, copiously ciliate.

2. *L. hirsuta*.

- Corolla-tube strongly gibbous at the base: leaf-blades pubescent beneath, scarcely if at all ciliate. 3. *L. glaucescens*.
 Leaf-blades glabrous, glaucous, especially beneath: corolla greenish yellow, glabrous. 4. *L. dioica*.
 Corolla-limb scarcely 2-lipped, of 5 nearly equal lobes. 5. *L. sempervirens*.
 B. Flowers in pairs, each pair terminating an axillary peduncle, accompanied by a pair of bracts and bractlets.
 Bracts minute, very different from the leaves: corolla-tube not gibbous at the base: vine. 6. *L. japonica*.
 Bracts foliaceous, resembling the leaves: corolla-tube gibbous at the base: upright shrubs.
 Leaves with more or less pubescent blades, not cordate at the base.
 Leaf-blades relatively thick, pale and glaucous, strongly reticulated beneath.
 Leaf-blades ciliate: flowers longer than the peduncles: drupe blue. 7. *L. coerulea*.
 Leaf-blades not ciliate: flowers shorter than the peduncles: drupe red. 8. *L. oblongifolia*.
 Leaf-blades relatively thin, bright green, ciliate, not reticulated beneath. 9. *L. ciliata*.
 Leaves with glabrous cordate blades. 10. *L. Tatarica*.

1. *Lonicera Caprifolium* L. ITALIAN OR PERFOLIATE HONEYSUCKLE. (Man. p. 875; I. F. f. 3455.) Thickets, N. Y., N. J. and Pa. to Mich., and in the Southern States. Nat. from Eu.—*Pennsylvania*: CHESTER.

2. *Lonicera hirsuta* Eaton. HAIRY HONEYSUCKLE. (Man. p. 875; I. F. f. 3456.) In woodlands, Vt. and Ont. to Man., Pa., Ohio and Mich.—*Pennsylvania*: MONROE; JEFFERSON.

3. *Lonicera glaucescens* Rydb. DOUGLAS' HONEYSUCKLE. (Man. p. 875; I. F. f. 3457.) Ont. to Saskatchewan, Pa., N. C., Ohio and Kans.—*Pennsylvania*: SULLIVAN; CLEARFIELD; FAYETTE; ARMSTRONG; ERIE, Presque Isle; ALLEGHENY.

4. *Lonicera dioica* L. SMOOTH-LEAVED OR GLAUCCUS HONEYSUCKLE. (Man. p. 875; I. F. f. 3458.) In rocky and usually dry situations, Quebec to Man., N. C., Ohio and Mich.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; CHESTER; LANCASTER; MIFFLIN; BLAIR.

5. *Lonicera sempervirens* L. TRUMPET HONEYSUCKLE. (Man. p. 875; I. F. f. 3461.) In low ground, or on hillsides, Conn. to Fla., Neb. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; LANCASTER; ALLEGHENY.

6. *Lonicera Japonica* Thunb. JAPANESE HONEYSUCKLE. (Man. p. 876; I. F. f. 3462.) Escaped, N. Y. and Pa. to N. C., Fla. and W. Va.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; FRANKLIN; ALLEGHENY.

7. *Lonicera coerulea* L. BLUE OR MOUNTAIN FLY HONEYSUCKLE. (Man. p. 876; I. F. f. 3463.) In low grounds, Newf. to Alaska, R. I., Pa., Wis. and Calif. Also in Eu. and Asia.—*Pennsylvania*: MONROE, Naomi Pines.

8. *Lonicera oblongifolia* (Goldie) Hook. SWAMP FLY HONEYSUCKLE. (Man. p. 876; I. F. f. 3464.) In swamps, Quebec to Man., Vt. to Pa. and Mich.—*Pennsylvania*: ERIE, near Union City.

9. *Lonicera ciliata* Muhl. AMERICAN FLY HONEYSUCKLE. (Man. p. 876; I. F. f. 3465.) In moist woods, N. S. to Man., Conn., Pa. and Mich.—*Pennsylvania*: PIKE; MONROE; TIOGA; SULLIVAN; CENTRE; HUNTINGDON; BLAIR; VENANGO; SOMERSET; SUSQUEHANNA; ALLEGHENY.

10. *Lonicera Tatarica* L. TARTARIAN BUSH HONEYSUCKLE. (Man. p. 876; I. F. f. 3467.) Escaped, Ont. and Vt. to N. Y., N. J. and Ky. Native of Asia.—*Pennsylvania*: NORTHAMPTON, in woods.

7. **DIERVILLA** Moench.

1. *Diervilla Diervilla* (L.) MacM. BUSH HONEYSUCKLE. (Man. p. 877; I. F. f. 3469.) In dry or rocky woodlands, Newf. to the N. W. Terr., N. C. and Mich.—*Pennsylvania*: PIKE; MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; LANCASTER; CHESTER; FRANKLIN; HUNTINGDON; SOMERSET; ERIE; ALLEGHENY.

Order 8. VALERIANALES.

Gynoecium 3-carpellary, two of the carpels abortive.

Fam. 1. VALERIANACEAE.

Gynoecium 1-carpellary.

Fam. 2. DIPSACACEAE.

FAMILY 1. VALERIANACEAE Batsch. VALERIAN FAMILY.

Sepals becoming very slender and plumose: fruit 1-celled. 1. VALERIANA.

Sepals minute or obsolete: fruit 3-celled, 2 of the cavities empty.

2. VALERIANELLA.

1. VALERIANA L.

Corolla-tube relatively slender, 10–20 mm. long: basal leaves with merely toothed cordate blades.

1. *V. pauciflora*.

Corolla-tube relatively stout, 2–6 mm. long: basal leaves with pinnatifid and not cordate blades.

2. *V. officinalis*.

1. *Valeriana pauciflora* Michx. LARGE-FLOWERED VALERIAN. (Man. p. 878; I. F. f. 3471.) In moist soil, Pa. to W. Va., Ill., Ky. and Mo.—*Pennsylvania*: LANCASTER, near Millersville; HUNTINGDON; ALLEGHENY.

2. *Valeriana officinalis* L. GARDEN VALERIAN. (Man. p. 879; I. F. f. 3474.) Escaped, N. Y. and N. J., native of Eu. and Asia.—*Pennsylvania*: ALLEGHENY.

2. VALERIANELLA Poll.

Corolla blue or purplish: fruit about twice as broad as thick: introduced species.

1. *V. Locusta*.

Corolla white: fruit about as broad as thick: native species.

Fruit triangular-pyramidal.

2. *V. chenopodifolia*.

Fruit globular or ovoid-tetragonal.

Fruit with the fertile portion fully as wide as the sterile.

3. *V. radiata*.

Fruit with the fertile portion much smaller and narrower than the sterile.

4. *V. Woodsiana*.

1. **Valerianella Locusta** (L.) Bettke. EUROPEAN CORN SALAD. (Man. p. 879; I. F. f. 3475.) In waste places, N. Y., N. J. and Pa. to Va. and La. Nat. from Eu.—*Pennsylvania*: BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY; NORTHAMPTON.

2. **Valerianella chenopodifolia** (Pursh) DC. GOOSE-FOOT CORN SALAD. (Man. p. 879; I. F. f. 3476.) In moist soil, western N. Y. to Va., Wis. and Ky.—*Pennsylvania*: ALLEGHENY.

3. **Valerianella radiata** (L.) Dufr. BEAKED CORN SALAD. (Man. p. 879; I. F. f. 3477.) In moist soil, N. Y. to Fla., Mich., Mo. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER; ALLEGHENY; DELAWARE.

4. **Valerianella Woodsiana** (T. & G.) Walp. WOODS' CORN SALAD. (Man. p. 880; I. F. f. 3479.) In moist soil, N. Y., Pa. and Ohio to Tenn. and Tex.—*Pennsylvania*: BUCKS; PHILADELPHIA; LANCASTER; DAUPHIN; WESTMORELAND; ALLEGHENY; HUNTINGDON.

4b. **V. Woodsiana patellaria** (Sulliv.) A. Gray. (Man. p. 880.) Ohio and Pa.—BUCKS; LANCASTER.

FAMILY 2. DIPSACACEAE Lindl. TEASEL FAMILY.

1. DIPSACUS L.

1. **Dipsacus sylvestris** Huds. WILD TEASEL. (Man. p. 880; I. F. f. 3481.) In waste places, Me. and Ont. to Va., west to Mich. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; FRANKLIN; SOMERSET; ALLEGHENY.

Order 9. CAMPANULALES.

Flowers variously disposed, but not in involucrate heads: plants mostly with milky juice.

Seeds without endosperm: flowers monoecious or dicecious: vines (our species) with tendrils. Fam. 1. CUCURBITACEAE.

Seeds with endosperm: flowers perfect: upright or spreading herbs.

Fam. 2. CAMPANULACEAE.

Flowers in involucrate heads.

Corollas of each head all expanded into ligules. Fam. 3. CICHORIACEAE.

Corollas of each head without ligules, or the outer series with them.

Stamens with distinct or nearly distinct anthers.

Fam. 4. AMBROSIACEAE.

Stamens with the anthers united around the style (except in *Kuhnia*).

Fam. 5. COMPOSITAE.

FAMILY 1. **CUCURBITACEAE** B. Juss. GOURD FAMILY.

Fruit smooth and glabrous : ovules and seeds numerous, horizontal.

1. MELOTHRIA.

Fruit prickly and often pubescent : ovules and seeds 1 or few in each cavity, erect or pendulous.

Fruit opening at the apex or irregularly : seeds several.

2. MICRAMPELIS.

Fruit indehiscent : seed solitary.

3. SICYOS.

1. **MELOTHRIA** L.

1. *Melothria pendula* L. CREEPING CUCUMBER. (Man. p. 882; I. F. f. 3486.) In thickets, Pa. to Fla., Ind., Ky., La. and Mex.—*Pennsylvania* : Collected many years ago by Schweinitz.

2. **MICRAMPELIS** Raf.

1. *Micrampelis lobata* (Michx.) Greene. WILD BALSAM APPLE. (Man. p. 883; I. F. f. 3487.) Along rivers and in waste places, Me. to Ont., Mont., Va., Ky. and Tex.—*Pennsylvania* : NORTHAMPTON; BUCKS; LANCASTER; CARBON; DAUPHIN; SUSQUEHANNA; ALLEGHENY.

3. **SICYOS** L.

1. *Sicyos angulatus* L. ONE-SEEDED BUR-CUCUMBER. STAR CUCUMBER. (Man. p. 883; I. F. f. 3489.) Along river banks and in moist places, Quebec to S. Dak., south to Fla., Kans. and Tex.—*Pennsylvania* : NORTHAMPTON; BUCKS; DELAWARE; CHESTER; PHILADELPHIA; LYCOMING; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

FAMILY 2. **CAMPANULACEAE** Juss. BELLFLOWER FAMILY.

Flowers regular : corolla campanulate or rotate : anthers separate.

Corolla campanulate, or rotate in *C. Americana* : flowers all complete.

1. CAMPANULA.

Corolla rotate : flowers various, the earlier ones cleistogamous.

2. SPECULARIA.

Flowers irregular : corolla with a cleft tube and a 2-lipped limb : anthers united around the style.

3. LOBELIA.

1. **CAMPANULA** L.

Corolla campanulate : style straight or nearly so.

Corollas over 12 mm. long.

Stem-leaves with linear blades ; basal leaves with orbicular or ovate-orbicular blades.

1. *C. rotundifolia*.

Stem-leaves and basal leaves with ovate or ovate-lanceolate blades.

2. *C. rapunculoides*.

Corollas less than 10 mm. long.

3. *C. aparinoides*.

Corolla rotate : style declined.

4. *C. Americana*.

1. *Campanula rotundifolia* L. HAREBELL. (Man. p. 884; I. F. f. 3491.) On moist rocks and in meadows, Lab. to Alaska, south to N. J., Neb., in the Rocky Mts. to Ariz., and in the Sierra Nevada to Calif. Also in Eu. and Asia.—*Pennsylvania* : NORTHAMPTON; BUCKS; MONROE; BERKS; LANCASTER; YORK; LUZERNE; HUNTINGDON.

2. *Campanula rapunculoides* L. EUROPEAN BELLFLOWER. (Man. p. 885; I. F. f. 3492.) In fields and along roadsides, N. B. to Ont., southern N. Y. and Ohio. Nat. from Eu.—*Pennsylvania*: PIKE; MONROE; LANCASTER.

3. *Campanula aparinoides* Pursh. MARSH BELLFLOWER. (Man. p. 885; I. F. f. 3494.) In grassy swamps, N. B. to the N. W. Terr., south to Ga., Ky. and Colo.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; BERKS; CHESTER; LANCASTER; YORK; DAUPHIN; FRANKLIN; HUNTINGDON; ALLEGHENY; ERIE.

4. *Campanula Americana* L. TALL BELLFLOWER. (Man. p. 885; I. F. f. 3496.) In moist thickets and woods, N. B. to Ont., S. Dak., Fla., Ky., Ark. and Kans.—*Pennsylvania*: BUCKS; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. SPECULARIA Heist.

1. *Specularia perfoliata* (L.) A. DC. VENUS' LOOKING-GLASS. (Man. p. 886; I. F. f. 3498.) In dry woods, Me. to B. C., Fla., La., Mex., Utah and Ore.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

3. LOBELIA L.

Species aquatic: stems scaly.

1. *L. Dortmanna*.

Species terrestrial: stems leafy.

Corolla red.

2. *L. cardinalis*.

Corolla blue or rarely white.

Corolla, exclusive of the lower lip, over 10 mm. long.

Anthers glabrous at the tip.

3. *L. syphilitica*.

Anthers bearded at the tip.

4. *L. puberula*.

Corolla, exclusive of the lower lip, less than 10 mm. long.

Stem-leaves with relatively broad blades.

Capsule partly inferior, 2.5–3 mm. long.

5. *L. spicata*.

Capsule wholly inferior, 5–8 mm. long.

6. *L. inflata*.

Stem-leaves with very narrow blades.

Capsule wholly inferior, about 4 mm. long: flowers much shorter than the stalks.

7. *L. Kalmii*.

Capsule half-inferior, about 2 mm. long: flowers longer than the stalks or nearly as long.

8. *L. Nuttallii*.

1. *Lobelia Dortmanna* L. WATER LOBELIA. (Man. p. 887; I. F. f. 3500.) Borders of ponds, N. J. and Pa. to N. S., N. B., the N. W. Terr. and B. C. Also in Eu.—*Pennsylvania*: PIKE, Twelve Mile Pond; MONROE; LUZERNE, Great Lake; SUSQUEHANNA.

2. *Lobelia cardinalis* L. CARDINAL-FLOWER. (Man. p. 888; I. F. f. 3502.) In moist soil, N. B. to Fla., the N. W. Terr., Kans. and Tex.—*Pennsylvania*: MONROE; LACKAWANNA; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; YORK; COLUMBIA; BEDFORD; LEBANON; ERIE; BEAVER; ALLEGHENY.

3. *Lobelia syphilitica* L. GREAT LOBELIA. BLUE CARDINAL-FLOWER. (Man. p. 888; I. F. f. 3503.) In moist soil, Me. and Ont. to

S. Dak., Ga., La. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; HUNTINGDON; BEDFORD; WESTMORELAND; VENANGO; ERIE; ALLEGHENY.

4. *Lobelia puberula* Michx. DOWNY LOBELIA. (Man. p. 888; I. F. f. 3505.) In moist sandy soil, southern N. J. to Fla., west to Ill., Kans. and Tex.—*Pennsylvania*: CHESTER; LANCASTER, New Texas.

5. *Lobelia spicata* Lam. PALE SPIKED LOBELIA. (Man. p. 888; I. F. f. 3507.) In dry, mostly sandy soil, or in meadows, N. S. and Ont. to the N. W. Terr., N. C., La. and Ark.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; CENTRE; VENANGO; ALLEGHENY.

5a. *L. spicata parviflora* A. Gray. (Man. p. 889.)—LANCASTER.

6. *Lobelia inflata* L. INDIAN OR WILD TOBACCO. (Man. p. 889; I. F. f. 3509.) In fields and thickets, Lab. to the N. W. Terr., Ga., Neb., Ark. and Kans.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; COLUMBIA; FRANKLIN; HUNTINGDON; ALLEGHENY.

7. *Lobelia Kalmii* L. BROOK OR KALM'S LOBELIA. (Man. p. 889; I. F. f. 3510.) On wet banks and in wet meadows, N. S. to N. J., west to Ont., the N. W. Terr., Ohio and Mich.—*Pennsylvania*: LANCASTER, Dillerville Swamp; ERIE, Presque Isle.

8. *Lobelia Nuttallii* R. & S. NUTTALL'S LOBELIA. (Man. p. 889; I. F. f. 3511.) Sandy soil, L. I to Pa., Fla. and Ga.—*Pennsylvania*: BUCKS, Bristol; DELAWARE, Tinicum.

FAMILY 3. CICHORIACEAE Reichenb. CHICORY FAMILY.

Pappus of scales or scales and bristles, or wanting.

Pappus of both scales and bristles, or wanting.

Corollas blue or white.

1. CICHORIUM.

Corollas yellow.

Pappus wanting.

2. LAPSANA.

Pappus of rounded scales, sometimes accompanied by an inner series of bristles.

3. ADOPOGON.

Pappus, at least a part of it, of plumose bristles.

Plume-branches of the pappus not interwebbed.

Plants scapose.

4. PICRIS.

Plants caulescent.

5. LEONTODON.

Plume-branches of the pappus interwebbed.

6. TRAGOPOGON.

Pappus of simple bristles.

Achenes spinulose or with short processes near the apex.

7. TARAXACUM.

Achenes smooth or merely papillose.

Achenes flattened.

Achenes truncate at the top.

8. SONCHUS.

Achenes narrowed or beaked at the top.

9. LACTUCA.

Achenes prismatic or terete.

Pappus of soft white bristles: achenes narrowed or beaked at the top.

10. CREPIS.

Pappus of relatively rigid brown, brownish purple, red or pale bristles: achenes columnar, except in a few *Hieracia*.

2. *Campanula rapunculoides* L. EUROPEAN BELLFLOWER. (Man. p. 885; I. F. f. 3492.) In fields and along roadsides, N. B. to Ont., southern N. Y. and Ohio. Nat. from Eu.—*Pennsylvania*: PIKE; MONROE; LANCASTER.

3. *Campanula aparinoides* Pursh. MARSH BELLFLOWER. (Man. p. 885; I. F. f. 3494.) In grassy swamps, N. B. to the N. W. Terr., south to Ga., Ky. and Colo.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; BERKS; CHESTER; LANCASTER; YORK; DAUPHIN; FRANKLIN; HUNTINGDON; ALLEGHENY; ERIE.

4. *Campanula Americana* L. TALL BELLFLOWER. (Man. p. 885; I. F. f. 3496.) In moist thickets and woods, N. B. to Ont., S. Dak., Fla., Ky., Ark. and Kans.—*Pennsylvania*: BUCKS; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. SPECULARIA Heist.

1. *Specularia perfoliata* (L.) A. DC. VENUS' LOOKING-GLASS. (Man. p. 886; I. F. f. 3498.) In dry woods, Me. to B. C., Fla., La., Mex., Utah and Ore.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

3. LOBELIA L.

Species aquatic: stems scaly.

1. *L. Dortmanna*.

Species terrestrial: stems leafy.

Corolla red.

2. *L. cardinalis*.

Corolla blue or rarely white.

Corolla, exclusive of the lower lip, over 10 mm. long.

Anthers glabrous at the tip.

3. *L. syphilitica*.

Anthers bearded at the tip.

4. *L. puberula*.

Corolla, exclusive of the lower lip, less than 10 mm. long.

Stem-leaves with relatively broad blades.

Capsule partly inferior, 2.5–3 mm. long.

5. *L. spicata*.

Capsule wholly inferior, 5–8 mm. long.

6. *L. inflata*.

Stem-leaves with very narrow blades.

Capsule wholly inferior, about 4 mm. long: flowers much shorter than the stalks.

7. *L. Kalmii*.

Capsule half-inferior, about 2 mm. long: flowers longer than the stalks or nearly as long.

8. *L. Nuttallii*.

1. *Lobelia Dortmanna* L. WATER LOBELIA. (Man. p. 887; I. F. f. 3500.) Borders of ponds, N. J. and Pa. to N. S., N. B., the N. W. Terr. and B. C. Also in Eu.—*Pennsylvania*: PIKE, Twelve Mile Pond; MONROE; LUZERNE, Great Lake; SUSQUEHANNA.

2. *Lobelia cardinalis* L. CARDINAL-FLOWER. (Man. p. 888; I. F. f. 3502.) In moist soil, N. B. to Fla., the N. W. Terr., Kans. and Tex.—*Pennsylvania*: MONROE; LACKAWANNA; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; YORK; COLUMBIA; BEDFORD; LEBANON; ERIE; BEAVER; ALLEGHENY.

3. *Lobelia syphilitica* L. GREAT LOBELIA. BLUE CARDINAL-FLOWER. (Man. p. 888; I. F. f. 3503.) In moist soil, Me. and Ont. to

S. Dak., Ga., Ia. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; HUNTINGDON; BEDFORD; WESTMORELAND; VENANGO; ERIE; ALLEGHENY.

4. *Lobelia puberula* Michx. DOWNY LOBELIA. (Man. p. 888; I. F. f. 3505.) In moist sandy soil, southern N. J. to Fla., west to Ill., Kans. and Tex.—*Pennsylvania*: CHESTER; LANCASTER, New Texas.

5. *Lobelia spicata* Lam. PALE SPIKED LOBELIA. (Man. p. 888; I. F. f. 3507.) In dry, mostly sandy soil, or in meadows, N. S. and Ont. to the N. W. Terr., N. C., Ia. and Ark.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; CENTRE; VENANGO; ALLEGHENY.

5a. *L. spicata parviflora* A. Gray. (Man. p. 889.)—LANCASTER.

6. *Lobelia inflata* L. INDIAN OR WILD TOBACCO. (Man. p. 889; I. F. f. 3509.) In fields and thickets, Lab. to the N. W. Terr., Ga., Neb., Ark. and Kans.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; COLUMBIA; FRANKLIN; HUNTINGDON; ALLEGHENY.

7. *Lobelia Kalmii* L. BROOK OR KALM'S LOBELIA. (Man. p. 889; I. F. f. 3510.) On wet banks and in wet meadows, N. S. to N. J., west to Ont., the N. W. Terr., Ohio and Mich.—*Pennsylvania*: LANCASTER, Dillerville Swamp; ERIE, Presque Isle.

8. *Lobelia Nuttallii* R. & S. NUTTALL'S LOBELIA. (Man. p. 889; I. F. f. 3511.) Sandy soil, L. I to Pa., Fla. and Ga.—*Pennsylvania*: BUCKS, Bristol; DELAWARE, Tinicum.

FAMILY 3. CICHORIACEAE Reichenb. CHICORY FAMILY.

Pappus of scales or scales and bristles, or wanting.

Pappus of both scales and bristles, or wanting.

Corollas blue or white.

1. CICHORIUM.

Corollas yellow.

Pappus wanting.

2. LAPSANA.

Pappus of rounded scales, sometimes accompanied by an inner series of bristles.

3. ADOPOGON.

Pappus, at least a part of it, of plumose bristles.

Plume-branches of the pappus not interwebbed.

Plants scapose.

4. PICRIS.

Plants caulescent.

5. LEONTODON.

Plume-branches of the pappus interwebbed.

6. TRAGOPOGON.

Pappus of simple bristles.

Achenes spinulose or with short processes near the apex.

7. TARAXACUM.

Achenes smooth or merely papillose.

Achenes flattened.

Achenes truncate at the top.

8. SONCHUS.

Achenes narrowed or beaked at the top.

9. LACTUCA.

Achenes prismatic or terete.

Pappus of soft white bristles: achenes narrowed or beaked at the top.

10. CREPIS.

Pappus of relatively rigid brown, brownish purple, red or pale bristles: achenes columnar, except in a few *Hieracia*.

Disk or corollas yellow, orange or red.

11. *HIERACIUM*.

Disk or corollas pale, cream-colored or purple.

12. *NABALUS*.**1. CICHORIUM L.**

1. *Cichorium Intybus* L. CHICORY. (Man. p. 891; I. F. f. 3513.) Roadsides and waste places, N. S. to Minn., N. C., Neb. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; HUNTINGDON; CENTRE; VENANGO; ALLEGHENY.

1a. *C. Intybus divaricatum* DC. (Man. p. 891.)—NORTHAMPTON.

2. LAPSANA L.

1. *Lapsana communis* L. NIPPLEWORT. (Man. p. 891; I. F. f. 3514.) Along roadsides and in waste places, Quebec and Ont. to N. J. and Pa. Also on the Pacific Coast. Nat. from Eu.—*Pennsylvania*: NORTHAMPTON, Easton; LANCASTER.

3. ADOPOGON Neck.

Scapes branched above, the first node with a conspicuous bract.

1. *A. Virginicum*.

Scapes simple, naked.

2. *A. Carolinianum*.

1. *Adopogon Virginicum* (L.) Kuntze. VIRGINIA GOAT'S-BEARD. (Man. p. 892; I. F. f. 3516.) In moist woods and meadows, Mass. to southern Ont. and Man., Ga., Ky., Mo. and Kans.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; BERKS; SCHUYLKILL; LANCASTER; COLUMBIA; FRANKLIN; ALLEGHENY.

2. *Adopogon Carolinianum* (Walt.) Britton. CAROLINA DWARF DANDELION. (Man. p. 892; I. F. f. 3519.) In dry, sandy soil, Me. to Ont., Minn., Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; SCHUYLKILL; PHILADELPHIA.

4. PICRIS L.

1. *Picris hieracioides* L. HAWKWEED PICRIS. (Man. p. 894; I. F. f. 3524.) In waste places, Ill., Pa., N. J. and in ballast about the seaports. Adv. from Eu. Native also of Asia.—*Pennsylvania*: MONROE, Stroudsburg; NORTHAMPTON, Seidersville.

5. LEONTODON L.

Pappus single: scape branched: head before anthesis erect.

1. *L. autumnale*.

Pappus double: scape simple: head before anthesis drooping.

2. *L. nudicaule*.

1. *Leontodon autumnale* L. FALL DANDELION. (Man. p. 893; I. F. f. 3522.) In fields and along roadsides, Newf. and Ont. to N. J., Pa. and Ohio. Nat. from Eu. Native also of Asia.—*Pennsylvania*: PHILADELPHIA, on and about ballast.

2. *Leontodon nudicaule* (L.) Porter. ROUGH HAWKBIT. (Man. p. 893; I. F. f. 3523.) In ballast and waste places about the eastern and western seaports. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON, Seidersville.

6. **TRAGOPOGON** L.

Bracts of the involucre shorter than the ligules or merely equalling them :
corollas yellow.

1. *T. pratensis*.

Bracts of the involucre much longer than the ligules : corollas purple.

2. *T. porrifolius*.

1. **Tragopogon pratensis** L. YELLOW GOAT'S-BEARD. MEADOW SALSIFY. (Man. p. 895 ; I. F. f. 3528.) In fields and waste places, N. B. to N. J., Ohio and Man. Nat. from Eu.—*Pennsylvania* : MONROE ; SUSQUEHANNA ; DELAWARE.

2. **Tragopogon porrifolius** L. OYSTER PLANT. PURPLE GOAT'S-BEARD. SALSIFY. (Man. p. 896 ; I. F. f. 3529.) In fields and waste places, Ont. to N. J., N. C., Minn. and Colo. Native of Eu.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; MONTGOMERY.

7. **TARAXACUM** Hall.

Achenes greenish brown, the beak fully twice or thrice as long as the body :
outer involucre bracts reflexed.

1. *T. Taraxacum*.

Achenes red, the beak less than twice the length of the body : outer involucre
bracts ascending or spreading.

2. *T. erythrospermum*.

1. **Taraxacum Taraxacum** (L.) Karst. DANDELION. (Man. p. 896 ; I. F. f. 3532.) Perhaps indigenous northward, southward nat. from Eu. Also in Asia.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; PHILADELPHIA ; DELAWARE ; CHESTER ; LANCASTER ; ALLEGHENY.

2. **Taraxacum erythrospermum** Andr. RED-SEEDED DANDELION. (Man. p. 896 ; I. F. f. 3533.) In fields and woods, Me. to Vt., southern N. Y. and Pa.—*Pennsylvania* : MONROE ; BUCKS ; LANCASTER.

8. **SONCHUS** L.

Bracts of the involucre glandular-pubescent : heads about 25 mm. high.

1. *S. arvensis*.

Bracts of the involucre glabrous : heads 12-16 mm. high.

Achene striate and transversely wrinkled : leaf-auricles acute.

2. *S. oleraceus*.

Achene merely ribbed, not transversely wrinkled : leaf-auricles rounded.

3. *S. asper*.

1. **Sonchus arvensis** L. CORN SOW-THISTLE. (Man. p. 897 ; I. F. f. 3534.) In low grounds, fields and roadsides, Newf. to Minn., N. J., and at Great Salt Lake, Utah. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON ; PHILADELPHIA.

2. **Sonchus oleraceus** L. ANNUAL SOW-THISTLE. (Man. p. 897 ; I. F. f. 3535.) In fields and waste places, throughout Am., except extreme north. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; ALLEGHENY.

3. **Sonchus asper** (L.) All. SPINY SOW-THISTLE. (Man. p. 897 ; I. F. f. 3536.) Range of last. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON ; BUCKS ; DELAWARE ; CHESTER ; LANCASTER ; FRANKLIN ; BLAIR ; ALLEGHENY.

9. **LACTUCA** L.

Pappus bright white.

Leaf-blades spiny-toothed and often spiny along the midrib beneath : corollas yellow.

Involucres 6-12-flowered : beak longer than the achene-body.

1. *L. Scariola*.

Involucres 12-20-flowered : beak shorter than the achene-body.

2. *L. sagittifolia*.

Leaf-blades without spines on the margins or midrib.

Achenes thin, the body prolonged in a slender beak.

Leaf-blades, at least some of them, pinnatifid.

Leaves glabrous.

3. *L. Canadensis*.

Leaves hirsute, at least on and about the midrib.

4. *L. hirsuta*.

Leaf-blades entire or merely toothed.

2. *L. sagittifolia*.

Achenes thick, the body beakless or with a mere thick neck.

Leaf-blades toothed : achene-body not narrowed into a neck.

5. *L. villosa*.

Leaf-blades pinnatifid : achene-body narrowed into a neck.

6. *L. Floridana*.

7. *L. spicata*.

Pappus brown.

1. **Lactuca Scariola** L. PRICKLY LETTUCE. (Man. p. 898 ; I. F. f. 3537.) In fields and waste places, Me. to S. Dak., N. J., Ga., Neb., Colo. and Kans. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON ; LANCASTER ; FRANKLIN ; ALLEGHENY.

2. **Lactuca sagittifolia** Ell. ARROW-LEAVED LETTUCE. (Man. p. 898 ; I. F. f. 3541.) In dry open soil, N. B. and Ont. to Idaho, Ga. and Kans.—*Pennsylvania* : NORTHAMPTON ; LANCASTER ; ALLEGHENY.

3. **Lactuca Canadensis** L. WILD OR TALL LETTUCE. (Man. p. 898 ; I. F. f. 3539.) In moist, open places, N. S. to the N. W. Terr., south to Ga., Ala., La. and Ark.—*Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; LUZERNE ; LANCASTER ; YORK.

3a. **L. Canadensis montana** Britton. (Man. p. 898.)—MONROE ; BUCKS ; ALLEGHENY.

4. **Lactuca hirsuta** Muhl. HAIRY WOOD-LETTUCE. (Man. p. 898 ; I. F. f. 3540.) In dry soil, Me. to Ont., Minn., Ala. and Tex.—*Pennsylvania* : ELK ; YORK.

5. **Lactuca villosa** Jacq. HAIRY-VEINED BLUE LETTUCE. (Man. p. 899 ; I. F. f. 3543.) In thickets, N. Y. to Ill., south to Fla., Ga. and Ky.—*Pennsylvania* : NORTHAMPTON ; LANCASTER ; FRANKLIN ; ALLEGHENY.

6. **Lactuca Floridana** (L.) Gaertn. FLORIDA LETTUCE. (Man. p. 899 ; I. F. f. 3544.) In moist, open places, southern N. Y. and Pa. to Ill., Neb., Fla., La. and Kans.—*Pennsylvania* : NORTHAMPTON ; LANCASTER ; FRANKLIN ; DELAWARE.

7. **Lactuca spicata** (Lam.) Hitchc. TALL BLUE LETTUCE. (Man. p. 899 ; I. F. f. 3545.) In moist soil, Newf. to Man., south to N. C., Tenn., Iowa and S. Dak.—*Pennsylvania* : MONROE ; NORTHAMPTON ; BUCKS ; CHESTER ; LANCASTER ; LEBANON ; FRANKLIN ; ERIE ; ALLEGHENY.

10. CREPIS L.

Upper stem-leaves with linear revolute merely sessile blades. 1. *C. tectorum*.

Upper stem-leaves with lanceolate or oblong flat clasping blades.

Achene 10-striate : involucre mostly less than 8 mm. high. 2. *C. virens*.

Achene 13-striate : involucre mostly over 8 mm. high. 3. *C. biennis*.

1. *Crepis tectorum* L. NARROW-LEAVED HAWKSBEARD. (Man. p. 902 ; I. F. f. 3556.) In waste places and in ballast, N. J. to Conn., Ont., Mich. and Neb.—*Pennsylvania*: BUCKS, Sellersville.

2. *Crepis virens* L. SMOOTH HAWKSBEARD. (Man. p. 902 ; I. F. f. 3557.) In fields and waste places, Conn., N. Y., N. J. and Pa. and in ballast about the seaports. Also on the Pacific Coast. Adv. from Eu.—*Pennsylvania*: NORTHAMPTON, Easton.

3. *Crepis biennis* L. ROUGH HAWKSBEARD. (Man. p. 902 ; I. F. f. 3558.) In waste places, Vt., Pa., and in ballast about the seaports. Nat. or adv. from Eu.—*Pennsylvania*: NORTHAMPTON, Easton ; CHESTER.

11. HIERACIUM L.

Inflorescence consisting of a single head : flowering stems leafless.

1. *H. Pilosella*.

Inflorescence of several corymbose or paniculate heads : flowering stem leafy, the leaves sometimes reduced to scales.

Stem more or less scape-like, terminating in a broad corymb or a narrow panicle : leaves mainly or wholly on the lower part of the stem ; blades of an obovate or spatulate type.

Corollas and ligules red or red orange.

2. *H. aurantiacum*.

Corollas and ligules yellow.

Achenes columnar.

Longer involucre bracts glabrous or nearly so.

Flowering stems nearly naked, glabrous : peduncles glabrous or sparingly glandular-pubescent.

3. *H. venosum*.

Flowering stems leafy, pubescent at least below : peduncles densely glandular-pubescent.

4. *H. Marianum*.

Longer involucre bracts copiously pubescent.

Stem nearly leafless, glabrous to the inflorescence.

5. *H. Greenii*.

Stem leafy below, hirsute.

8. *H. scabrum*.

Achenes fusiform, or constricted below the summit.

9. *H. Gronovii*.

Stem leafy to the inflorescence, not scape-like : leaf-blades of an oblong, lanceolate or elliptic type.

Heads corymbose : principal bracts of the involucre in 2-4 series.

6. *H. Canadense*.

Heads paniculate : principal bracts of the involucre in 1 series.

7. *H. paniculatum*.

1. *Hieracium Pilosella* L. MOUSE-EAR HAWKWEED. (Man. p. 903 ; I. F. f. 3561.) Dooryards and fields, Ont., N. Y., Pa. and Mich. Adv. from Eu.—*Pennsylvania*: SUSQUEHANNA ; NORTHAMPTON, Easton.

2. *Hieracium aurantiacum* L. ORANGE HAWKWEED. (Man. p. 904 ; I. F. f. 3564.) In fields, woods and along roadsides, N. B. and Ont. to

N. Y., N. J. and Pa. Nat. from Eu.—*Pennsylvania*: WAYNE; SUSQUEHANNA; WYOMING; LACKAWANNA; POTTER; CENTRE; ERIE.

3. *Hieracium venosum* L. RATTLESNAKE-WEED. (Man. p. 904; I. F. f. 3567.) Dry woods and thickets, Me. to Man., south to Ga., Ky. and Neb.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; MONTGOMERY; COLUMBIA; FRANKLIN; HUNTINGDON; ALLEGHENY.

4. *Hieracium Marianum* Willd. MARYLAND HAWKWEED. (Man. p. 904; I. F. f. 3568.) In dry woods and thickets, R. I. to southern N. Y., Pa., Ky., Ala. and Fla.—*Pennsylvania*: NORTHAMPTON; MONROE; DELAWARE; CHESTER; LANCASTER.

5. *Hieracium Greenii* Porter & Britton. GREEN'S HAWKWEED. (Man. p. 905; I. F. f. 3569.) In dry soil, mountains of Pa. to Va. and W. Va.—*Pennsylvania*: FRANKLIN, Two Top Mt.; HUNTINGDON, Tuscarora Mts.

6. *Hieracium Canadense* Michx. CANADA HAWKWEED. (Man. p. 905; I. F. f. 3571.) In dry woods and thickets, N. S. to the N. W. Terr., south to N. J. and Mich.—*Pennsylvania*: MONROE; BUCKS; HUNTINGDON.

7. *Hieracium paniculatum* L. PANICLED HAWKWEED. (Man. p. 905; I. F. f. 3572.) In dry woods, Me., Quebec to Ga., Ala. and Ky.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; ALLEGHENY.

8. *Hieracium scabrum* Michx. ROUGH HAWKWEED. (Man. p. 905; I. F. f. 3573.) In dry woods and clearings, N. S. to Minn., Ga., Neb. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; MONTGOMERY; YORK; FRANKLIN; HUNTINGDON; CRAWFORD; ERIE; ALLEGHENY.

9. *Hieracium Gronovii* L. HAIRY HAWKWEED. (Man. p. 905; I. F. f. 3574.) In dry soil, Mass. to Ont., Ill., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN.

12. NABALUS Cass.

Bracts of the involucre glabrous or sometimes with a few scattered hairs.

Involucre slender, about 2 mm. thick, 5-7-flowered, light green: pappus light straw-colored. 1. *N. altissimus*.

Involucre stout, 3-6 mm. thick, 9-16-flowered, deep green, glaucous, purple. Pappus deep cinnamon-brown. 2. *N. albus*.

Pappus straw-color or light brown.

Larger bracts of the outer involucre lanceolate: pappus surpassing the inner involucre bracts. 3. *N. serpentarius*.

Larger bracts of the outer involucre ovate or triangular-ovate: pappus and inner involucre bracts about equal in length.

4. *N. trifolius*.

Bracts of the involucre copiously pubescent.

Involucre 8-16-flowered: inflorescence thyrsoid. 5. *N. racemosus*.

Involucre 20-25-flowered: inflorescence corymbose-paniculate.

6. *N. crepidineus*.

1. *Nabalus altissimus* (L.) Hook. TALL WHITE LETTUCE. (Man. p. 906; I. F. f. 3576.) In woods and thickets, Newf. to Man., south to

Ga. and Tenn.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; ERIE; ALLEGHENY.

2. *Nabalus albus* (L.) Hook. RATTLESNAKE-ROOT. WHITE LETTUCE. (Man. p. 907; I. F. f. 3577.) In woods, Me. and Ont. to Man., south to Ga. and Ky.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; MONTGOMERY; ALLEGHENY.

3. *Nabalus serpentarius* (Pursh) Hook. LION'S-FOOT. GALL-OF-THE-EARTH. (Man. p. 907; I. F. f. 3578.) In fields and thickets, Ont. to southern N. Y., Fla., Ala. and Ky.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; LANCASTER; ALLEGHENY.

4. *Nabalus trifolius* Cass. TALL RATTLESNAKE-ROOT. (Man. p. 907; I. F. f. 3579.) In woods and thickets, Me. to Vt., Pa., Tenn. and Mo.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; MONTGOMERY; FRANKLIN; HUNTINGDON.

5. *Nabalus racemosus* (Michx.) DC. GLAUOUS WHITE-LETTUCE. (Man. p. 908; I. F. f. 3584.) In moist open places, N. B. and Anticosti to the N. W. Terr., south to southern N. Y., N. J., Mo. and Colo.—*Pennsylvania*: Stations reported, but no specimens preserved.

6. *Nabalus crepidineus* (Michx.) DC. CORYMBED RATTLESNAKE-ROOT. (Man. p. 908; I. F. f. 3585.) In fields and thickets, western Pa. and N. Y. to Ky., Minn. and Kans.—*Pennsylvania*: MERCER.

FAMILY 4. AMBROSIACEAE Reichenb. RAGWEED FAMILY.

Involucral bracts of the staminate heads united: pistillate involucre but little changed at maturity.

1. AMBROSIA.

Involucral bracts of the staminate heads distinct: pistillate involucre becoming a bur.

2. XANTHIUM.

1. AMBROSIA L.

Leaf-blades palmately 3-5-lobed or merely toothed: receptacle naked.

1. *A. trifida*.

Leaf-blades 1-2-pinnatifid: receptacle chaffy.

2. *A. artemisiaefolia*.

1. *Ambrosia trifida* L. BITTER-WEED. GREAT RAGWEED. (Man. p. 910; I. F. f. 3592.) In moist soil, Quebec to Fla., the N. W. Terr., Neb., Colo. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONROE; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

1a. *A. trifida integrifolia* (Muhl.) T. & G. (Man. p. 910.) Range of type.—NORTHAMPTON; LANCASTER; HUNTINGDON; ALLEGHENY.

2. *Ambrosia artemisiaefolia* L. RAGWEED. ROMAN WORMWOOD. HOG-WEED. (Man. p. 910; I. F. f. 3593.) In dry soil and cultivated fields, N. S. to Fla., B. C. and Mex. Also in W. Indies and S. Am.; introd. into Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; FRANKLIN; ALLEGHENY.

2. XANTHIUM L.

A. Plants spine-armed: leaf-blades of a lanceolate type, not cordate.

1. *X. spinosum*.

B. Plants not spine-armed: leaf-blades of a reniform, orbicular or ovate type, cordate or truncate.

Mature pistillate involucre 12-20 mm. long, glabrous or nearly so, with straight or nearly straight beaks. 2. *X. glabratum*.

Mature pistillate involucre 15-30 mm. long.

Body of the bur-like involucre oblong, twice as long as thick or more.

3. *X. Pennsylvanicum*.

Body of the bur-like involucre ovoid or oval, less than twice as long as thick. 4. *X. echinatum*.

1. *Xanthium spinosum* L. SPINY OR THORNY CLOBUR. (Man. p. 912; I. F. f. 3598.) In waste grounds, Ont. to Fla., west to W. Va., Mo. and Tex. Nat. from Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN.

2. *Xanthium glabratum* (DC.) Britton. SMOOTHISH COCKLEBUR OR BURWEED. (Man. p. 912; I. F. f. 3599.) In waste places, N. Eng. to Fla., Neb. and Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

3. *Xanthium Pennsylvanicum* Wallr. PENNSYLVANIA CLOBUR. (Man. p. 912.) In open places, Ont. to D. C. and Minn.—*Pennsylvania*: NORTHAMPTON; ERIE.

4. *Xanthium echinatum* Murr. BEACH CLOBUR. (Man. p. 913.) On river shores, lake and sea beaches, Vt. to Minn. and N. C.—*Pennsylvania*: NORTHAMPTON.

FAMILY 5. COMPOSITAE Adans. THISTLE FAMILY.

Stigmatic lines at the base of the stigma or below the middle.

Stigmas filiform or subulate, hispidulous. TRIBE I. VERNONIEAE.

Stigmas more or less clavate, papillose-puberulent.

TRIBE II. EUPATORIEAE.

Stigmatic lines extending to the tip of the stigma or to the appendages.

a. Anthers without elongated appendages at the top.

Anther-sacs tailed at the base.

TRIBE IV. INULEAE.

Anther-sacs not tailed at the base.

Receptacle naked.

Bracts of the involucre well imbricated.

Stigmas of the perfect flowers with terminal appendages.

TRIBE III. ASTEREAE.

Stigmas of the perfect flowers with truncate or hairy or papillose tips.

Bracts of the involucre herbaceous.

TRIBE VI. HELENIEAE.

Bracts of the involucre dry and scarious.

TRIBE VII. ANTHEMIDEAE.

Bracts of the involucre little if at all imbricated, except when the broad outer ones overlap the inner.

TRIBE VIII. SENECTIONEAE.

Receptacle chaffy.

Bracts of the involucre herbaceous, sometimes foliaceous.

TRIBE V. HELIANTHEAE.

Bracts of the involucre dry and scarious.

TRIBE VII. ANTHEMIDEAE.

- b. Anthers with elongated, cartilaginous mostly connate appendages at the tip.

TRIBE IX. CYNAREAE.

TRIBE I. VERNONIEAE.

Pappus double : heads not glomerate.

1. VERNONIA.

Pappus single : heads glomerate.

2. ELEPHANTOPUS.

TRIBE II. EUPATORIEAE.

Achenes 3-5-angled, not ribbed.

Upright herbs : involucre bracts more than 4.

3. EUPATORIUM.

Twining vines : involucre bracts 4 or fewer or rarely more.

4. WILLUGBAEYA.

Achenes 8-10-striate or 8-10-ribbed, not angled.

Heads in panicles or corymbs : involucre bracts strongly striate-nerved.

5. KUHNIA.

Heads in spikes or racemes : involucre bracts faintly striate or smooth.

6. LACINIARIA.

TRIBE III. ASTEREAE.

Plants with perfect flowers, at least not dioecious.

Ray-flowers with yellow corollas (white in one species of *Solidago*).

Pappus, at least that of the disk-flowers, double, *i. e.*, an outer series of scales or short bristles and an inner one of capillary bristles.

7. CHRYSOPSIS.

Pappus wholly of capillary bristles.

Ray-flowers fewer than those of the disk : receptacle alveolate.

8. SOLIDAGO.

Ray-flowers more numerous than those of the disk : receptacle fimbriate.

9. EUTHAMIA.

Ray-flowers with white or colored corollas, but not yellow.

Pappus a mere crown, or of few awns or bristles, or wanting.

Receptacle conic.

10. BELLIS.

Receptacle flat or merely convex.

11. BOLTONIA.

Pappus of numerous capillary bristles.

Pappus mainly of a single series of bristles, sometimes accompanied by a few shorter outer ones.

Involucre of 2 or several series of bracts.

Involucre narrow : bracts firm : ray-flowers few, inconspicuous.

12. SERICOCARPUS.

Involucre turbinate to hemispheric : bracts thin : ray-flowers usually numerous and conspicuous.

13. ASTER.

Involucre of 1 or 2 series of bracts.

Ligules of the ray-flowers longer than the diameter of the disk : heads conspicuous.

14. ERIGERON.

Ligules of the ray-flowers not longer than the diameter of the disk : heads inconspicuous.

15. LEPTILON.

Pappus manifestly double, the bristles of the inner series longer than those of the outer.

Ray-flowers with white ligules : leaves with relatively broad blades.

16. DOELLINGERIA.

Ray-flowers with purple ligules : leaves with linear blades.

17. IONACTIS.

Plants with dioecious flowers.

18. BACCHARIS.

TRIBE IV. INULEAE.

Ray-flowers wanting: disk-flowers, at least, with white or whitish corollas: heads relatively small.

Receptacle chaffy.

19. GIFOLA.

Receptacle naked.

Involucre of herbaceous bracts: plants more or less pubescent, not woolly.

20. PLUCHEA.

Involucre of scarious bracts: plants woolly.

Plants with dioecious or polygamo-dioecious flowers.

Pappus-bristles of the staminate flowers thickened above: stems mainly creeping.

21. ANTENNARIA.

Pappus-bristles not thickened: stems erect.

22. ANAPHALIS.

Plants not dioecious: flowers all fruit-producing.

23. GNAPHALIUM.

Ray-flowers present and yellow: heads relatively large.

24. INULA.

TRIBE V. HELIANTHEAE.

Disk-flowers perfect, but not fruit-producing.

Achenes thick or turgid: pappus wanting.

25. POLYMNIA.

Achenes flattened: pappus present, sometimes obsolete.

Ray-flowers in 2 or 3 series: achenes falling away free.

26. SILPHIUM.

Ray-flowers in 1 series: achenes adnate to 2 or 3 bractlets and falling away with them.

27. CHRYSOGONUM.

Disk-flowers fruit-producing.

Corollas of the ray-flowers persistent on the achenes.

28. HELIOPSIS.

Corollas of the ray-flowers deciduous or wanting.

Pappus a cup or a crown, or of few teeth, awns or bristles.

Achenes, at least those of the disk-flowers, not flattened (except in *Verbena*): bractlets of the receptacle mostly concave or clasping.

Bractlets of the receptacle subulate or bristle-like: ray-flowers with white ligules.

29. ECLIPTA.

Bractlets of the receptacle broad.

30. RUDBECKIA.

Receptacle conic.

Receptacle flat or merely convex.

Achenes scarcely flattened, neither winged nor margined.

31. HELIANTHUS.

Achenes of the disk-flowers flattened, margined or winged.

32. VERBESINA.

Achenes very flat: bractlets of the receptacle flat or at least not clasping.

Pappus of 2 short awns or teeth, or obsolete.

33. COREOPSIS.

Pappus of 2-6 awns or teeth, upwardly or downwardly barbed.

34. BIDENS.

Pappus of numerous scales.

Heads with ray-flowers: leaves opposite; blades toothed.

35. GALINSOGA.

Heads without ray-flowers: leaves alternate; blades entire.

36. MARSHALLIA.

TRIBE VI. HELENIEAE.

A single genus in our range.

37. HELENIUM.

TRIBE VII. ANTHEMIDEAE.

a. Receptacle chaffy.

Involucre obovoid to campanulate: heads small: achenes flattened.

38. ACHILLEA.

- Involucre hemispheric : heads large : achenes terete. 39. *ANTHEMIS*.
 b. Receptacle naked or sometimes merely pubescent.
 Ray-flowers normally present.
 Involucre with several series of bracts : receptacle flat or hemispheric. 40. *CHRYSANTHEMUM*.
 Involucre with few series of bracts : receptacle conic or ovoid. 41. *MATRICARIA*.
 Ray-flowers wanting.
 Pappus a small crown : heads corymbose. 42. *TANACETUM*.
 Pappus wanting : heads spicate, racemose or paniced. 43. *ARTEMISIA*.

TRIBE VIII. SENECEONEAE.

- Leaves of the flowering stems reduced to scales.
 Head solitary : corollas yellow. 44. *TUSSILAGO*.
 Heads corymbose : corollas white or purple. 45. *PETASITES*.
 Leaves of the flowering stems not reduced to scales.
 Leaves opposite. 46. *ARNICA*.
 Leaves alternate.
 Flowers with white or pink corollas : ray-flowers wanting.
 Flowers various, the marginal pistillate, those of the disk perfect. 47. *ERECTITES*.
 Flowers all perfect.
 Involucre of about 5 main bracts. 48. *MESADENIA*.
 Involucre of about 12 main bracts. 49. *SYNOSMA*.
 Flowers with yellow corollas : ray-flowers mostly present. 50. *SENECIO*.

TRIBE IX. CYNAREAE.

- Achenes inserted on the receptacle by their bases, not oblique.
 Receptacle bristly.
 Filaments distinct.
 Bracts of the involucre with hooked tips : leaves with unarmed blades. 51. *ARCTIUM*.
 Bracts of the involucre not hooked : leaves spine-armed. 52. *CARDUUS*.
 Filaments united below. 53. *MARIANA*.
 Receptacle not bristly. 54. *ONOPORDON*.
 Achenes obliquely inserted on the receptacle.
 Heads not subtended by bristly leaves. 55. *CENTAUREA*.
 Heads subtended by bristly leaves. 56. *CNICUS*.

1. *VERNONIA* Schreb.

- Bracts of the involucre, at least some of them, with filiform or subulate tips.
 Pappus straw-colored. 1. *V. glauca*.
 Pappus purple or purplish. 2. *V. noveboracensis*.
 Bracts of the involucre merely acute or obtuse. 3. *V. maxima*.

1. *Vernonia glauca* (L.) Britton. BROAD-LEAVED IRON-WEED. (Man. p. 919; I. F. f. 3604.) In woods, Pa. and Md. to Ohio, Fla. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON.

2. *Vernonia noveboracensis* (L.) Willd. NEW YORK IRON-WEED. (Man. p. 918; I. F. f. 3601.) In moist soil, Mass. to Minn., Ga. and Kans.—*Pennsylvania*: ALLEGHENY.

3. Vernonia maxima Small. TALL IRON-WEED. (Man. p. 919; I. F. f. 3605.) In moist soil, Pa. to Ala., Mo., Ky. and La.—*Pennsylvania*: ALLEGHENY; ERIE.

2. ELEPHANTOPUS L.

1. Elophantopus Carolinianus Willd. CAROLINA ELEPHANT'S FOOT. (Man. p. 920; I. F. f. 3609.) In dry woods, N. J. and Pa. to Fla., Kans. and Tex.—*Pennsylvania*: DELAWARE; LANCASTER, Peach Bottom.

3. EUPATORIUM L.

Receptacle flat: disk white, pink or purple.

Leaves whorled in 3's or 6's; blades relatively broad.

Leaf-blades rugose, manifestly pubescent: inflorescence depressed.

1. *E. maculatum*.

Leaf-blades not rugose, nearly glabrous: inflorescence pyramidal.

Leaf-blades sharply serrate.

2. *E. purpureum*.

Leaf-blades crenate, the teeth somewhat apiculate.

3. *E. trifoliatum*.

Leaves opposite or whorled in individual cases in some narrow-leaved forms.

Leaves connate-perfoliate.

4. *E. perfoliatum*.

Leaves not connate-perfoliate.

Leaf-blades sessile or essentially so.

Base of the leaf-blade not broader than the rest of the blade, often narrowed.

Bracts of the involucre obtuse.

Leaf-blades of a linear type, entire or shallowly and irregularly toothed.

5. *E. hyssopifolium*.

Leaf-blades of a lanceolate, oblong, ovate or oval type, markedly toothed.

Blades of the upper leaves toothed from near the base to the apex.

6. *E. Torreyanum*.

Blades of the upper leaves toothed above the middle.

7. *E. altissimum*.

Bracts of the involucre acute or acuminate.

8. *E. album*.

Base of the leaf-blade broadly rounded, cordate, truncate, or broadly cuneate.

Leaf-blades crenate, crenate-serrate or crenate-dentate.

Branches of the inflorescence alternate: leaf-blades coarsely few-toothed.

9. *E. verbenaeifolium*.

Branches of the inflorescence opposite: leaf-blades more finely and evenly toothed.

Leaf-blades about as broad as long, truncate or subcordate at the base.

10. *E. rotundifolium*.

Leaf-blades manifestly longer than broad, rounded or broadly cuneate at the base.

11. *E. pubescens*.

Leaf-blades sharply serrate.

12. *E. sessilifolium*.

Leaf-blades manifestly petioled.

Leaf-blades acuminate.

13. *E. ageratoides*.

Leaf-blades obtuse or abruptly acute.

14. *E. aromaticum*.

Receptacle conic or hemispheric: disk blue to violet, or white in individual cases.

15. *E. coelestinum*.

1. Eupatorium maculatum L. SPOTTED JOE-PYE WEED. (Man. p. 921; I. F. f. 3614.) In moist soil, N. Y. to Minn., B. C., N. C., Kans.

and N. Mex.—*Pennsylvania*. NORTHAMPTON; BUCKS; CRAWFORD; MONTGOMERY; DELAWARE; ALLEGHENY.

1a. *E. maculatum amoenum* (Pursh) Britton. (Man. p. 921.) In dryer places.—NORTHAMPTON; BUCKS.

2. *Eupatorium purpureum* L. JOE-PYE OR TRUMPET-WEED. (Man. p. 921; I. F. f. 3615.) In moist soil, N. B. to Man., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; CAMBRIA; ERIE.

2a. *E. purpureum falcatum* (Michx.) Britton. (Man. p. 921.) With the type.

3. *Eupatorium trifoliatum* L. CRENATE-LEAVED JOE-PYE WEED. (Man. p. 921.) In moist soil, N. Y. and N. J. to Tenn. and Wis.—*Pennsylvania*: NORTHAMPTON, Easton.

4. *Eupatorium perfoliatum* L. COMMON THOROUGHWORT. BONESET. (Man. p. 923; I. F. f. 3627.) In wet places, N. B. to Man., Fla., Neb. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

5. *Eupatorium hyssopifolium* L. HYSSOP-LEAVED THOROUGHWORT. (Man. p. 922; I. F. f. 3619.) In dry fields, Mass. to Fla. and Tex.—*Pennsylvania*: LANCASTER.

6. *Eupatorium Torreyanum* Short. TORREY'S THOROUGHWORT. (Man. p. 922; I. F. f. 3620.) In dry soil, Pa. to N. C., Ky., Fla. and Tex.—*Pennsylvania*: LANCASTER; ALLEGHENY.

7. *Eupatorium altissimum* L. TALL THOROUGHWORT. (Man. p. 922; I. F. f. 3622.) In dry open places, Pa. to N. C., Ala., S. Dak., Neb. and Tex.—*Pennsylvania*: LEHIGH; FRANKLIN.

8. *Eupatorium album* L. WHITE THOROUGHWORT. (Man. p. 922; I. F. f. 3618.) In sandy soil, L. I. to Fla. and La.—*Pennsylvania*: CHESTER, on the Brandywine.

9. *Eupatorium verbenaeifolium* Michx. VERVAIN THOROUGHWORT. (Man. p. 923; I. F. f. 3624.) In moist soil, Mass. to Pa., south to Fla. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LEBANON.

9a. *E. verbenaeifolium Saundersii* Porter. (Man. p. 923.)—MONTGOMERY, Willow Grove; DELAWARE, Tinicum.

10. *Eupatorium rotundifolium* L. ROUND-LEAVED THOROUGHWORT. (Man. p. 923; I. F. f. 3625.) In dry soil, southern N. Y. to Fla., Ky. and Tex.—*Pennsylvania*: MONTGOMERY; DELAWARE, Tinicum; LANCASTER.

11. *Eupatorium pubescens* Muhl. HAIRY THOROUGHWORT. (Man. p. 923; I. F. f. 3626.) In dry soil, N. H. and Mass. to Pa., W. Va. and Fla.—*Pennsylvania*: LANCASTER.

12. *Eupatorium sessilifolium* L. UPLAND OR BASTARD BONESET. (Man. p. 922; I. F. f. 3623.) In dry woods, Mass. to Pa., Ill. and Ala.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; PHILADELPHIA; FRANKLIN; ALLEGHENY.

3. Vernonia maxima Small. TALL IRON-WEED. (Man. p. 919; I. F. *f.* 3605.) In moist soil, Pa. to Ala., Mo., Ky. and La.—*Pennsylvania*: ALLEGHENY; ERIE.

2. ELEPHANTOPUS L.

1. Elephantopus Carolinianus Willd. CAROLINA ELEPHANT'S FOOT. (Man. p. 920; I. F. *f.* 3609.) In dry woods, N. J. and Pa. to Fla., Kans. and Tex.—*Pennsylvania*: DELAWARE; LANCASTER, Peach Bottom.

3. EUPATORIUM L.

Receptacle flat: disk white, pink or purple.

Leaves whorled in 3's or 6's; blades relatively broad.

Leaf-blades rugose, manifestly pubescent: inflorescence depressed.

1. *E. maculatum*.

Leaf-blades not rugose, nearly glabrous: inflorescence pyramidal.

Leaf-blades sharply serrate.

2. *E. purpureum*.

Leaf-blades crenate, the teeth somewhat apiculate.

3. *E. trifoliatum*.

Leaves opposite or whorled in individual cases in some narrow-leaved forms.

Leaves connate-perfoliate.

4. *E. perfoliatum*.

Leaves not connate-perfoliate.

Leaf-blades sessile or essentially so.

Base of the leaf-blade not broader than the rest of the blade, often narrowed.

Bracts of the involucre obtuse.

Leaf-blades of a linear type, entire or shallowly and irregularly toothed.

5. *E. hyssopifolium*.

Leaf-blades of a lanceolate, oblong, ovate or oval type, markedly toothed.

Blades of the upper leaves toothed from near the base to the apex.

6. *E. Torreyanum*.

Blades of the upper leaves toothed above the middle.

7. *E. altissimum*.

Bracts of the involucre acute or acuminate.

8. *E. album*.

Base of the leaf-blade broadly rounded, cordate, truncate, or broadly cuneate.

Leaf-blades crenate, crenate-serrate or crenate-dentate.

Branches of the inflorescence alternate: leaf-blades coarsely few-toothed.

9. *E. verbenaeifolium*.

Branches of the inflorescence opposite: leaf-blades more finely and evenly toothed.

Leaf-blades about as broad as long, truncate or subcordate at the base.

10. *E. rotundifolium*.

Leaf-blades manifestly longer than broad, rounded or broadly cuneate at the base.

11. *E. pubescens*.

Leaf-blades sharply serrate.

12. *E. sessilifolium*.

Leaf-blades manifestly petioled.

Leaf-blades acuminate.

13. *E. ageratoides*.

Leaf-blades obtuse or abruptly acute.

14. *E. aromaticum*.

Receptacle conic or hemispheric: disk blue to violet, or white in individual cases.

15. *E. coelestinum*.

1. Eupatorium maculatum L. SPOTTED JOE-PYE WEED. (Man. p. 921; I. F. *f.* 3614.) In moist soil, N. Y. to Minn., B. C., N. C., Kans.

and N. Mex.—*Pennsylvania*. NORTHAMPTON; BUCKS; CRAWFORD; MONTGOMERY; DELAWARE; ALLEGHENY.

1a. *E. maculatum amoenum* (Pursh) Britton. (Man. p. 921.) In dryer places.—NORTHAMPTON; BUCKS.

2. *Eupatorium purpureum* L. JOE-PYE OR TRUMPET-WEED. (Man. p. 921; I. F. f. 3615.) In moist soil, N. B. to Man., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; CAMBRIA; ERIE.

2a. *E. purpureum falcatum* (Michx.) Britton. (Man. p. 921.) With the type.

3. *Eupatorium trifoliatum* L. CRENATE-LEAVED JOE-PYE WEED. (Man. p. 921.) In moist soil, N. Y. and N. J. to Tenn. and Wis.—*Pennsylvania*: NORTHAMPTON, Easton.

4. *Eupatorium perfoliatum* L. COMMON THOROUGHWORT. BONESET. (Man. p. 923; I. F. f. 3627.) In wet places, N. B. to Man., Fla., Neb. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

5. *Eupatorium hyssopifolium* L. HYSSOP-LEAVED THOROUGHWORT. (Man. p. 922; I. F. f. 3619.) In dry fields, Mass. to Fla. and Tex.—*Pennsylvania*: LANCASTER.

6. *Eupatorium Torreyanum* Short. TORREY'S THOROUGHWORT. (Man. p. 922; I. F. f. 3620.) In dry soil, Pa. to N. C., Ky., Fla. and Tex.—*Pennsylvania*: LANCASTER; ALLEGHENY.

7. *Eupatorium altissimum* L. TALL THOROUGHWORT. (Man. p. 922; I. F. f. 3622.) In dry open places, Pa. to N. C., Ala., S. Dak., Neb. and Tex.—*Pennsylvania*: LEHIGH; FRANKLIN.

8. *Eupatorium album* L. WHITE THOROUGHWORT. (Man. p. 922; I. F. f. 3618.) In sandy soil, L. I. to Fla. and La.—*Pennsylvania*: CHESTER, on the Brandywine.

9. *Eupatorium verbenaeifolium* Michx. VERVAIN THOROUGHWORT. (Man. p. 923; I. F. f. 3624.) In moist soil, Mass. to Pa., south to Fla. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LEBANON.

9a. *E. verbenaeifolium Saundersii* Porter. (Man. p. 923.)—MONTGOMERY, Willow Grove; DELAWARE, Tinicum.

10. *Eupatorium rotundifolium* L. ROUND-LEAVED THOROUGHWORT. (Man. p. 923; I. F. f. 3625.) In dry soil, southern N. Y. to Fla., Ky. and Tex.—*Pennsylvania*: MONTGOMERY; DELAWARE, Tinicum; LANCASTER.

11. *Eupatorium pubescens* Muhl. HAIRY THOROUGHWORT. (Man. p. 923; I. F. f. 3626.) In dry soil, N. H. and Mass. to Pa., W. Va. and Fla.—*Pennsylvania*: LANCASTER.

12. *Eupatorium sessilifolium* L. UPLAND OR BASTARD BONESET. (Man. p. 922; I. F. f. 3623.) In dry woods, Mass. to Pa., Ill. and Ala.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; PHILADELPHIA; FRANKLIN; ALLEGHENY.

13. *Eupatorium ageratoides* L. f. WHITE SNAKE-ROOT. (Man. p. 923; I. F. f. 3629.) In rich woods, N. B. to Ga., Ont., S. Dak., the I. Terr. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; DAUPHIN; LUZERNE; FRANKLIN; CENTRE; ERIE; ALLEGHENY.

14. *Eupatorium aromaticum* L. SMALLER WHITE SNAKE-ROOT. (Man. p. 924; I. F. f. 3630.) In dry soil, Mass. to Fla.—*Pennsylvania*: NORTHAMPTON; DELAWARE; CHESTER; MONTGOMERY; HUNTINGDON; CAMBRIA.

15. *Eupatorium coelestinum* L. MIST-FLOWER. (Man. p. 924; I. F. f. 3631.) In moist soil, N. J. to Fla., Ill., Kans., Ark. and Tex. Also in Cuba.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; ALLEGHENY.

4. WILLUGBAEYA Neck.

1. *Willugbaeya scandens* (L.) Kuntze. CLIMBING HEMPWEED OR BONESET. (Man. p. 924; I. F. f. 3632.) In swamps and moist soil, N. H. and Mass. to western Ont. and Ind., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; BERKS; CLEARFIELD; FRANKLIN.

5. KUHNIA L.

1. *Kuhnia eupatorioides* L. FALSE BONESET. (Man. p. 925; I. F. f. 3634.) In dry soil, N. J. to Ga., Ohio, W. Va. and Tex.—*Pennsylvania*: NORTHAMPTON; MONTGOMERY; DELAWARE; CHESTER; LEHIGH; SCHUYLKILL; LANCASTER; HUNTINGDON.

6. LACINIARIA Hill.

| | |
|---|--------------------------|
| Bracts of the involucre with rigid narrow spreading tips. | 1. <i>L. squarrosa</i> . |
| Bracts of the involucre with rounded appressed tips. | |
| Involucre hemispheric: heads peduncled. | 2. <i>L. scariosa</i> . |
| Involucre campanulate: heads sessile. | 3. <i>L. spicata</i> . |

1. *Laciniaria squarrosa* (L.) Hill. SCALY BLAZING STAR. (Man. p. 925; I. F. f. 3636.) In dry soil, western Ont. to Ky., Fla., S. Dak., Neb. and Tex.—*Pennsylvania*: LANCASTER.

2. *Laciniaria scariosa* (L.) Hill. LARGE BUTTON-SNAKEROOT. (Man. p. 926; I. F. f. 3642.) In dry soil, Me. to Fla., Ont., Man., Neb. and Tex.—*Pennsylvania*: LACKAWANNA; BERKS; FRANKLIN; FULTON; HUNTINGDON; CENTRE.

3. *Laciniaria spicata* (L.) Kuntze. DENSE BUTTON-SNAKEROOT. (Man. p. 926; I. F. f. 3643.) In moist soil, Mass. to Fla., Ont., S. Dak., La. and Ark.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; BERKS; DELAWARE; LANCASTER; YORK.

7. CHRYSOPSIS Nutt.

1. *Chrysopsis Mariana* (L.) Nutt. GOLDEN ASTER. (Man. p. 930; I. F. f. 3655.) In dry soil, N. Y. to Fla. and La.—*Pennsylvania*: BUCKS; MONTGOMERY; DELAWARE; PHILADELPHIA; CHESTER; LANCASTER.

8. *SOLIDAGO* L.

Heads in short or raceme-like axillary clusters subtended by leaf-like bracts.

Stem and branches terete : leaf-blades relatively narrow, shallowly toothed.

1. *S. caesia*.

Stem and branches angled : leaf-blades relatively broad, deeply toothed.

2. *S. flexicaulis*.

Heads in a terminal inconspicuously bracted panicle or thyrus, or a corymb.

A. Heads in a terminal panicle or thyrus : involucre bracts not ribbed.

Tips of the involucre bracts spreading or recurved. 3. *S. squarrosa*.

Tip of the involucre bracts erect or appressed.

Panicle or thyrus nearly equilateral, the branches erect or ascending : heads not secund.

Bracts of the involucre decidedly obtuse.

Achenes glabrous.

Stems copiously pubescent.

Ray-flowers with white ligules.

4. *S. bicolor*.

Ray-flowers with yellow ligules.

5. *S. hispida*.

Stems glabrous or merely puberulent.

Bracts of the involucre 1 mm. broad at the rounded apex, or more.

Involucres 4.5-5.5 mm. high, 3-3.5 mm. thick, the inner bracts barely 1 mm. wide.

6. *S. erecta*.

Involucres 5.5-6.5 mm. high, 4-4.5 mm. thick, the inner bracts fully 1 mm. wide.

7. *S. speciosa*.

Bracts of the involucre less than 1 mm. broad near the somewhat narrowed apex.

8. *S. uliginosa*.

Achenes pubescent.

9. *S. Purshii*.

Bracts of the involucre acute or acutish.

10. *S. puberula*.

Panicle or thyrus 1-sided, the branches spreading or recurved : heads secund.

Leaf-blades pinnately veined, not 3-ribbed.

Plants maritime : leaves fleshy-leathery.

11. *S. sempervirens*.

Plants not maritime : leaves not fleshy-leathery.

Internodes of the stem prominently angled below the leaves.

12. *S. patula*.

Internodes of the stem terete or essentially so.

Stems manifestly pubescent, rarely only in lines.

Leaves glabrous ; blades entire.

13. *S. odora*.

Leaves pubescent ; blades toothed.

14. *S. rugosa*.

Stems glabrous, at least below the inflorescence.

Branches of the inflorescence pubescent.

Involucre cylindric, few-flowered.

15. *S. ulmifolia*.

Involucre campanulate, many-flowered.

16. *S. arguta*.

Branches of the inflorescence glabrous.

Involucre less than 5 mm. high.

17. *S. juncea*.

Involucre over 5 mm. high.

18. *S. neglecta*.

Leaf-blades markedly 3-ribbed.

Stem glabrous.

19. *S. serotina*.

Stem pubescent.

a. Cauline leaves with relatively long blades, acuminate.

Blades of the cauline leaves of a linear type.

20. *S. rupestris*.

Blades of the cauline leaves of a lanceolate or oblong-lanceolate type.

21. *S. Canadensis*.

b. Cauline leaves with relatively short blades, obtuse or merely acute.

22. *S. nemoralis*.

B. Heads in a terminal corymb: involucre bracts ribbed.

23. *S. rigida*.

1. *Solidago caesia* L. WREATH OR WOODLAND GOLDENROD. (Man. p. 935; I. F. f. 3673.) In woods and thickets, Me. and Ont. to Minn., Fla., Ark. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; SUSQUEHANNA; LUZERNE; LEBANON; HUNTINGDON; FRANKLIN; ALLEGHENY.

2. *Solidago flexicaulis* L. BROAD-LEAVED GOLDENROD. (Man. p. 936; I. F. f. 3674.) In rich woods, N. B. to Ga., west to S. Dak. and Kans.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; SUSQUEHANNA; ERIE; ALLEGHENY.

3. *Solidago squarrosa* Muhl. STOUT RAGGED GOLDENROD. (Man. p. 935; I. F. f. 3671.) In rocky soil, N. B. and Ont., south to Va. and Ohio.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; SUSQUEHANNA; LUZERNE; LYCOMING; FRANKLIN; CENTRE; ALLEGHENY.

4. *Solidago bicolor* L. WHITE GOLDENROD. (Man. p. 936; I. F. f. 3676.) In dry soil, N. B. to Ga., west to Ont., Minn. and Mo.—*Pennsylvania*: MONROE; NORTHAMPTON; BERKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; SUSQUEHANNA; YORK; ALLEGHENY.

5. *Solidago hispida* Muhl. HAIRY GOLDENROD. (Man. p. 936; I. F. f. 3677.) In dry soil, N. S. to western Ont. and Minn., and south to Pa. and Wis.—*Pennsylvania*: MONROE; BUCKS; FRANKLIN; CAMBRIA; LANCASTER.

6. *Solidago erecta* Pursh. SLENDER GOLDENROD. (Man. p. 936; I. F. f. 3678.) In dry soil, N. J. and Pa. to Ga., and N. C. Reported from Minn. and S. Dak.—*Pennsylvania*: CENTRE, Bear Meadows.

7. *Solidago speciosa* Nutt. SHOWY GOLDENROD. (Man. p. 937; I. F. f. 3685.) In rich soil, N. S. to N. C., west to Minn., Kans. and Ark.—*Pennsylvania*: NORTHAMPTON; DELAWARE; TINTICUM; CHESTER; PHILADELPHIA; LANCASTER; HUNTINGDON.

8. *Solidago uliginosa* Nutt. BOG GOLDENROD. (Man. p. 937; I. F. f. 3684.) In swamps and bogs, Newf. to northern N. J. and Pa., west to western Ont., Minn. and Wis.—*Pennsylvania*: MONROE, Pocono and Tannersville.

9. *Solidago Purshii* Porter. RIVER-BANK GOLDENROD. (Man. p. 937; I. F. f. 3687.) On rocky river-banks, Newf. to northern N. Y., Vt. and Va.—*Pennsylvania*: YORK, McCall's Ferry.

10. *Solidago puberula* Nutt. DOWNY GOLDENROD. (Man. p. 936; I. F. f. 3681.) In sandy soil, N. B. to Fla. and Miss., northern N. Y.—*Pennsylvania*: MONROE; SCHUYLKILL; LUZERNE; CARBON; LEBANON, Penryn; YORK; LANCASTER; CHESTER; LACKAWANNA.

11. *Solidago sempervirens* L. SEASIDE GOLDENROD. (Man. p. 938; I. F. f. 3695.) On salt marshes, along tidal rivers and in sandy soil near the sea, N. B. to Fla. and Mex. Also in Bermuda.—*Pennsylvania*: DELAWARE; TINICUM.

12. *Solidago patula* Muhl. ROUGH-LEAVED GOLDENROD. (Man. p. 939; I. F. f. 3695.) In swamps, Me. and Ont. to Minn., south to Ga., Mo. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; SUSQUEHANNA; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

13. *Solidago odora* Ait. SWEET GOLDENROD. (Man. p. 938; I. F. f. 3691.) In dry soil, N. S. (?), Mass. to Fla., west to N. Y., Ky. and Tex.—*Pennsylvania*: MONROE; CARBON; SCHUYLKILL; LUZERNE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; DAUPHIN, Cold Springs; BERKS.

14. *Solidago rugosa* Mill. TALL HAIRY GOLDENROD. (Man. p. 938; I. F. f. 3693.) In dry soil, usually, Newf. to western Ont., south to Fla. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; SUSQUEHANNA; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; ERIE; ALLEGHENY.

15. *Solidago ulmifolia* Muhl. ELM-LEAVED GOLDENROD. (Man. p. 939; I. F. f. 3696.) In woods and copses, Me. to Ga., west to Minn. Kans. and Tex.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; BLAIR; ALLEGHENY.

16. *Solidago arguta* Ait. CUT-LEAVED GOLDENROD. (Man. p. 939; I. F. f. 3702.) In rich woods, Me. and Ont. to Ohio, south to Va.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; SUSQUEHANNA; HUNTINGDON; ALLEGHENY.

17. *Solidago juncea* Ait. EARLY GOLDENROD. (Man. p. 939; I. F. f. 3701.) In dry or rocky soil, N. B. to Hudson Bay and Man., N. C. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; PIKE; MONROE; LANCASTER; LEBANON; FRANKLIN; FULTON; ALLEGHENY.

18. *Solidago neglecta* T. & G. SWAMP GOLDENROD. (Man. p. 939; I. F. f. 3699.) In swamps, N. B. to Wis., Md. and Ill.—*Pennsylvania*: MONROE; BUCKS; DELAWARE.

19. *Solidago serotina* Ait. LATE GOLDENROD. (Man. p. 940; I. F. f. 3704.) In moist soil, Newf. to B. C., south to Ga., Tex., Nev. and Ore.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN; FRANKLIN; BUCKS; ALLEGHENY.

19a. *S. serotina gigantea* (Ait.) A. Gray. (Man. p. 940.) With the type.—NORTHAMPTON; BUCKS; LANCASTER; SUSQUEHANNA; ERIE.

20. *Solidago rupestris* Raf. ROCK GOLDENROD. (Man. p. 940; I. F. f. 3703.) Rocky stream banks, Pa. to D. C., W. Va., Tenn. and Ind.—*Pennsylvania*: WASHINGTON.

21. *Solidago Canadensis* L. CANADA GOLDENROD. (Man. p. 940; I. F. f. 3708.) Usually in dry soil, N. B. to the N. W. Terr. and B. C., south to Fla. and Ariz.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; SUSQUEHANNA; ERIE; ALLEGHENY.

21a. *S. Canadensis glabrata* Porter. (Man. p. 940.) LANCASTER, Tucquan; LEBANON, Penryn; LUZERNE, Lily Lake.

21b. *S. Canadensis scabriuscula* Porter. (Man. p. 940.) NORTHAMPTON; LANCASTER.

22. *Solidago nemoralis* Ait. GRAY OR FIELD GOLDENROD. (Man. p. 940; I. F. f. 3709.) In dry soil, Quebec to the N. W. Terr., Fla. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; SUSQUEHANNA; MONTGOMERY; HUNTINGDON; ALLEGHENY.

23. *Solidago rigida* L. STIFF GOLDENROD. (Man. p. 941; I. F. f. 3713.) In dry soil, Ont. to the N. W. Terr., south to Ga., Tex. and Colo.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; HUNTINGDON; CENTRE; ERIE.

9. *EUTHAMIA* Nutt.

Leaf-blades manifestly 3-5-ribbed: ray-flowers 12-30. 1. *E. graminifolia*.

Leaf-blades 1-ribbed: ray-flowers 5-8.

2. *E. Caroliniana*.

1. *Euthamia graminifolia* (L.) Nutt. BUSHY GOLDENROD. (Man. p. 942; I. F. f. 3718.) In moist soil and fields, N. B. to the N. W. Terr., Fla., Neb. and Kans.—*Pennsylvania*: MONROE; NORTHAMPTON; SUSQUEHANNA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

2. *Euthamia Caroliniana* (L.) Greene. SLENDER FRAGRANT GOLDENROD. (Man. p. 942; I. F. f. 3720.) In dry sandy soil, eastern Mass. to Ill., Fla., La. and Tex., mainly near the coast.—*Pennsylvania*: BUCKS, Bristol; MONTGOMERY; DELAWARE.

10. *BELLIS* L.

1. *Bellis perennis* L. EUROPEAN OR GARDEN DAISY. (Man. p. 943; I. F. f. 3724.) In waste places, southern N. Y. and eastern Pa. to N. S. and Ont. Fugitive from Eu. Native also of Asia. Nat. in Calif. and B. C.—*Pennsylvania*: NORTHAMPTON.

11. *BOLTONIA* L'Her.

1. *Boltonia asteroides* (L.) L'Her. ASTER-LIKE BOLTONIA. (Man. p. 945; I. F. f. 3729.) In moist soil, N. J. to Fla., west to Minn., Neb. and La.—*Pennsylvania*: DAUPHIN; LANCASTER; YORK, on the Susquehanna.

12. *SERICOCARPUS* Nees.

Leaf-blades toothed, those of the upper cauline leaves oblong, elliptic to ovate.

1. *S. asteroides*.

Leaf-blades entire, those of the upper cauline leaves linear or nearly so.

2. *S. linifolius*.

1. *Sericocarpus asteroides* (L.) B.S.P. TOOTHED WHITE-TOPPED ASTER. (Man. p. 946; I. F. f. 3734.) In dry woods, Me. to Fla., Ohio, Ky. and Ala.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; MONTGOMERY; LANCASTER; FRANKLIN; ALLEGHENY.

2. *Sericocarpus linifolius* (L.) B.S.P. NARROW-LEAVED WHITE-TOPPED ASTER. (Man. p. 946; I. F. f. 3732.) In dry, usually sandy soil, Can., Vt. to Ohio, Ga. and La.—*Pennsylvania*: DELAWARE; BUCKS; CHESTER; LANCASTER.

13. ASTER L.

A. Basal and lower cauline leaves with relatively broad blades, mainly of an ovate or cordate type, and with long petioles, the upper cauline somewhat similar but short-petioled or sessile.

a. Blades of the upper cauline leaves not cordate-clasping: petioles of the lower cauline leaves not dilated-clasping.

Ray-flowers with white, pink or violet ligules.

Ligules of the ray-flowers white or occasionally pinkish, usually 2-toothed: plants not glandular.

Involucre ovoid, campanulate or turbinate; bracts obtuse or rounded at the apex: basal leaves few and small, or wanting except in *A. glomeratus*.

Leaf-blades thin-membranous, smooth or nearly so.

Leaf-blades mainly of an ovate-lanceolate type: leaves of the branches relatively short. 1. *A. divaricatus*.

Leaf-blades mainly of an oblong-lanceolate type: leaves of the branches relatively long. 2. *A. tenebrosus*.

Leaf-blades thick, firm, rough, at least when dry.

Leaf-blades acute or short-acuminate, pilose beneath: inflorescence glomerate. 3. *A. glomeratus*.

Leaf-blades long-acuminate, not pilose beneath: inflorescence open paniculate. 4. *A. Claytonii*.

Involucre cylindric; bracts tapering to an obtuse tip: basal leaves large, tufted.

Bracts of the involucre pale, scarious, usually without herbaceous tips. 5. *A. curvescens*.

Bracts of the involucre broader, with herbaceous tips.

6. *A. Schreberi*.

Ligules of the ray-flowers violet, usually 3-toothed: plants glandular.

Most of the glands large, capitate: leaf-blades coarse and thick.

Glands mainly in the inflorescence: leaf-blades with a broad sinus: growing plant harsh. 7. *A. macrophyllus*.

Glands abundant in the foliage: leaf-blades with a narrow sinus: growing plant clammy. 8. *A. roscidus*.

Most of the glands minute, scarcely capitate: leaf-blades mostly thin.

9. *A. multiformis*.

Ray-flowers with blue or purple ligules.

*Leaf-blades thick or firm, entire or essentially so.

Leaves of a firm or thick texture; blades glabrous or nearly so above.

10. *A. Shortii*.

Leaves of a spongy texture; blades rough-puberulent.

11. *A. azureus*.

** Leaf-blades thin, prominently toothed.

Bracts of the involucre linear and obtuse or obtusish.

Leaf-blades thin, rough : petioles mainly not winged.

12. *A. cordifolius*.

Leaf-blades firm, smooth : petioles mainly winged.

13. *A. Lowrieanus*.

Bracts of the involucre linear and acute, or subulate.

14. *A. sagittaeifolius*.

b. Blades, or petiole-like bases of some of the cauline leaves cordate-clasping.

15. *A. undulatus*.

B. Basal and lower cauline leaves with relatively narrow blades, with more or less contracted petiole-like bases but not cordate ; upper cauline leaves with sessile or clasping blades.

Cauline leaves clasping by the more or less auriculate-cordate bases.

Stem rough-pubescent or hirsute.

Leaf-blades entire.

Leaves with sessile strongly cordate-clasping blades.

Stem rough-pubescent : involucre campanulate.

Inflorescence broad : leaves rough : stem relatively low.

16. *A. patens*.

Inflorescence narrow : leaves soft : stem tall.

17. *A. phlogifolius*.

Stem hirsute : involucre hemispheric.

18. *A. Novae-Angliae*.

Leaves with slightly clasping bases.

Involucre hemispheric ; bracts glandular.

19. *A. oblongifolius*.

Involucre turbinate ; bracts hispid.

20. *A. amethystinus*.

Leaf-blades, at least those of the lower leaves, toothed.

21. *A. puniceus*.

Stem glabrous or inconspicuously pubescent above.

Leaf-blades sharply serrate.

Leaves tapering to the base.

Leaf-blades mainly lanceolate to oblong-lanceolate, without petiole-like bases.

21. *A. puniceus*.

Leaf-blades mainly oval or ovate, some of the lower ones with petiole-like bases.

22. *A. patulus*.

Leaves abruptly contracted into broad petiole-like bases and often dilated near the stem.

23. *A. prenanthoides*.

Leaf-blades entire or nearly so, an occasional coarse tooth sometimes present.

Involucre campanulate.

Blades of the cauline leaves oblong to oval-lanceolate : inflorescence tending to a raceme-like panicle.

24. *A. laevis*.

Blades of the cauline leaves linear or elongated-lanceolate : inflorescence tending to a corymb-like panicle.

25. *A. concinnus*.

Involucre hemispheric.

Bracts of the involucre linear-subulate : leaf-blades narrowly linear.

26. *A. junceus*.

Bracts of the involucre linear : leaf-blades broader.

27. *A. Novi-Belgii*.

Cauline leaves with merely sessile or essentially sessile blades.

Leaves neither succulent nor fleshy.

Ray-flowers with violet ligules.

28. *A. Radula*.

Ray-flowers with white ligules, or sometimes pink or purplish.

Heads in a terminal corymb.

29. *A. acuminatus*.

Heads solitary at the ends of slender branchlets and disposed in racemes or panicles.

Heads scattered, the peduncles prolonged, copiously scaly.

30. *A. dumosus*.

Heads decidedly racemose or paniculate, the peduncles not conspicuously scaly.

Plant glabrous or pubescent, but not harsh: bracts of the involucre acute or obtusish.

Heads paniculate, not in 1-sided racemes.

Blades of the cauline leaves of a lanceolate or narrowly oblong type.

Heads mostly over 16 mm. broad.

Ligules of the ray-flowers usually bluish violet: leaf-blades firm.

31. *A. salicifolius*.

Ligules of the ray-flowers usually white: leaf-blades thinish.

32. *A. paniculatus*.

Heads mostly less than 16 mm. broad.

33. *A. Tradescantii*.

Blades of the cauline leaves of a linear-lanceolate or subulate type.

Upper leaves with linear blades.

34. *A. Faxonii*.

Upper leaves with subulate blades.

Stem paniculately branched and bushy.

35. *A. ericoides*.

Stem nearly simple or with few ascending branches.

36. *A. Pringlei*.

Heads racemose and disposed on one side of the branches.

Blades of the cauline leaves of a broader type than linear or linear-lanceolate, markedly toothed.

Stem finely pubescent or glabrate.

37. *A. lateriflorus*.

Stem villous.

38. *A. hirsuticaulis*.

Blades of the cauline leaves linear or linear-lanceolate.

39. *A. vimineus*.

Plant very rough: bracts of the involucre obtuse.

40. *A. multiflorus*.

Leaves fleshy or succulent.

Perennial plant: heads mostly over 12 mm. wide.

41. *A. tenuifolius*.

Annual plant: heads mostly less than 10 mm. wide.

42. *A. subulatus*.

1. *Aster divaricatus* L. WHITE WOOD ASTER. (Man. p. 949; I. F. f. 3737.) In open woodlands and thickets, in rather dry soil, Can. to Man., Ga. and Tenn.—*Pennsylvania*: NORTHAMPTON; LANCASTER; HUNTINGDON; ALLEGHENY; WESTMORELAND.

1a. *A. divaricatus cymulosus* Burgess. (Man. p. 949.) N. Eng. and N. Y. to Va.—NORTHAMPTON.

2. *Aster tenebrosus* Burgess. LONG-LEAVED WOOD ASTER. (Man. p. 950; I. F. f. 3736.) In moist dark woodlands, N. Y. to Va.—*Pennsylvania*: LANCASTER.

3. *Aster glomeratus* (Nees.) Bernh. BERNHARDI'S ASTER. (Man. p. 950; I. F. f. 3739.) In moist thickets, swamps or ravines, N. Y. and Pa.—*Pennsylvania*: ALLEGHENY.

4. *Aster Claytonii* Burgess. CLAYTON'S ASTER. (Man. p. 950; I. F. f. 3740.) In sunny or slightly shaded rocky places, N. Y. to the mountains of Va.—*Pennsylvania*: NORTHAMPTON; BUCKS.

5. *Aster curvescens* Burgess. DOME-TOPPED ASTER. (Man. p. 951; I. F. f. 3741.) In loose moist shaded soil, N. Eng. and N. Y. to Va.—*Pennsylvania*: NORTHAMPTON.

6. *Aster Schreberi* Nees. SCHREBER'S ASTER. (Man. p. 951; I. F. f. 3742.) In borders of woods and shaded fence-rows, N. Y. to Mich. and Va.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONROE; COLUMBIA; ALLEGHENY.

7. *Aster macrophyllus* L. LARGE-LEAVED ASTER. (Man. p. 951; I. F. f. 3743.) In moderately dry soil, in shaded places, Can. to Minn. and N. C.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; MONTGOMERY; SUSQUEHANNA; FRANKLIN; HUNTINGDON; ALLEGHENY.

8. *Aster roscidus* Burgess. DEWY-LEAF ASTER. (Man. p. 952; I. F. f. 3744.) In slight shade and rich cleared woodlands, Me. to Pa. and Mich.—*Pennsylvania*: NORTHAMPTON.

9. *Aster multiformis* Burgess. VARIOUS-LEAVED ASTER. (Man. p. 952; I. F. f. 3747.) In moist shaded places, Me. to western N. Y., Pa. and Md.—*Pennsylvania*: ERIE.

10. *Aster Shortii* Hook. SHORT'S ASTER. (Man. p. 953; I. F. f. 3750.) On banks and wood-margins, western Pa. to Va., Ga., Ill. and Tenn.—*Pennsylvania*: WESTMORELAND; ALLEGHENY; MERCER.

11. *Aster azureus* Lindl. SKY-BLUE ASTER. (Man. p. 953; I. F. f. 3751.) On prairies and wood-margins, western N. Y. to Ga., Minn. and Tex.—*Pennsylvania*: ALLEGHENY.

12. *Aster cordifolius* L. COMMON BLUE WOOD ASTER. (Man. p. 953; I. F. f. 3752.) Woods and thickets, N. B. to Minn., Ga. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; CHESTER; DELAWARE; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

12a. *A. cordifolius polycephalus* Porter. (Man. p. 953.)—NORTHAMPTON; BUCKS; LUZERNE.

13. *Aster Lowrieianus* Porter. LOWRIE'S ASTER. (Man. p. 953; I. F. f. 3753.) In woods, Conn. to Pa., Iowa, N. C. and Ky.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; LEBANON; LUZERNE; HUNTINGDON; ALLEGHENY.

13a. *A. Lowrieianus lancifolius* Porter. (Man. p. 954.)—MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; LEBANON; LUZERNE; SCHUYLKILL; SUSQUEHANNA.

13b. *A. Lowrieianus Bicknellii* Porter. (Man. p. 954.)—MONROE; NORTHAMPTON; BUCKS; LACKAWANNA; SUSQUEHANNA; MERCER.

14. *Aster sagittifolius* Willd. ARROW-LEAVED ASTER. (Man. p. 954; I. F. f. 3756.) In dry soil, N. B. to N. Dak., N. J., Ky. and Kans.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LEHIGH; CENTRE; MERCER; ALLEGHENY.

15. *Aster undulatus* L. WAVY-LEAF ASTER. (Man. p. 955; I. F. f. 3757.) In dry soil, N. B. and Ont., south to Fla., Ala. and Ark.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; ALLEGHENY; MERCER; HUNTINGDON.

15a. *A. undulatus loriformis* Burgess. (Man. p. 955.)—DAUPHIN; LANCASTER.

16. *Aster patens* Ait. (Man. p. 955; I. F. f. 3758.) In dry, open places, Mass. to northern N. Y., Minn., Kans., Fla., La. and Tex. Reported from Can.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; LEBANON; FRANKLIN; LUZERNE; ALLEGHENY.

17. *Aster phlogifolius* Muhl. (Man. p. 955; I. F. f. 3759.) In woods and thickets, N. Y. to Ohio, N. C. and Tenn.—*Pennsylvania*: NORTHAMPTON; LANCASTER; HUNTINGDON.

18. *Aster Novae-Angliae* L. NEW ENGLAND ASTER. (Man. p. 955; I. F. f. 3760.) In fields and along swamps, Quebec to the N. W. Terr., south to S. C., Mo., Kans. and Colo.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

19. *Aster oblongifolius* Nutt. AROMATIC ASTER. (Man. p. 955; I. F. f. 3761.) On prairies and bluffs, central Pa. to Minn., Neb., Va., Tenn. and Tex.—*Pennsylvania*: HUNTINGDON, Petersburg; WASHINGTON; ALLEGHENY.

20. *Aster amethystinus* Nutt. AMETHYST ASTER. (Man. p. 956; I. F. f. 3762.) In moist soil, Mass. to southern N. Y., eastern Pa., Ill. and Iowa.—*Pennsylvania*: NORTHAMPTON, on Delaware.

21. *Aster puniceus* L. RED-STALK ASTER. (Man. p. 956; I. F. f. 3764.) In swamps, N. S. to western Ont. and Minn., south to N. C., Ohio and Mich.—*Pennsylvania*: MONROE; SUSQUEHANNA; NORTHAMPTON; BUCKS; CRAWFORD; DELAWARE; CHESTER; LANCASTER; FRANKLIN; BLAIR; ERIE; ALLEGHENY.

21a. *A. puniceus firmus* (Nees.) T. & G. (Man. p. 956.) With the type.—BUCKS.

21b. *A. puniceus Crawfordii* Porter. (Man. p. 956.)—BUCKS, Tullytown.

21c. *A. puniceus compactus* Fernald. (Man. p. 956.)—DELAWARE, Tinicum.

22. *Aster patulus* Lam. SPREADING ASTER. (Man. p. 957; I. F. f. 3766.) N. B. to N. H. and Pa.—*Pennsylvania*: NORTHAMPTON, Bethlehem.

23. *Aster prenanthoides* Muhl. CROOKED-STEM ASTER. (Man. p. 957; I. F. f. 3767.) In moist soil, Mass. to Wis., south to W. Va., Ky. and Iowa.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; BLAIR; ERIE; ALLEGHENY.

23a. *A. prenanthoides porrectifolius* Porter. (Man. p. 957.)—NORTHAMPTON; BUCKS; SUSQUEHANNA; CAMERON.

24. *Aster laevis* L. SMOOTH ASTER. (Man. p. 957; I. F. f. 3768.) Usually in dry soil, Me. to Ont., the N. W. Terr., Pa., La. and Kans.—*Pennsylvania*: LACKAWANNA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LEBANON; HUNTINGDON; CENTRE; ALLEGHENY.

24a. *A. laevis amplifolius* Porter. (Man. p. 957.)—SUSQUEHANNA; LUZERNE; LANCASTER; NORTHAMPTON.

25. *Aster concinnus* Willd. NARROW-LEAVED SMOOTH ASTER. (Man. p. 957; I. F. f. 3769.) Conn. to Pa., Va., N. C. (?) and Ark.—*Pennsylvania*: LUZERNE.

26. *Aster junceus* Ait. RUSH ASTER. (Man. p. 957; I. F. f. 3771.) In swamps and bogs, N. S. to the N. W. Terr., south to N. J., Ohio, Wis. and in the Rocky Mts.—*Pennsylvania*: MONROE.

27. *Aster Novi-Belgii* L. NEW YORK ASTER. (Man. p. 958; I. F. f. 3773.) In swamps, Newf. to Me. and Ga., mainly near the coast.—*Pennsylvania*: MONTGOMERY; DELAWARE.

27a. *A. Novi-Belgii elodes* (T. & G.) A. Gray. (Man. p. 958.)—MONTGOMERY.

27b. *A. Novi-Belgii litoreus* A. Gray. (Man. p. 958.)—DELAWARE, Tinicum.

28. *Aster Radula* Ait. LOW ROUGH ASTER. (Man. p. 960; I. F. f. 3783.) In swamps, Del. and southern Pa. to Newf.—*Pennsylvania*: MONROE; NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; WESTMORELAND.

29. *Aster acuminatus* Michx. WHORLED OR MOUNTAIN ASTER. (Man. p. 961; I. F. f. 3789.) Moist woods, Lab. to Ont., western N. Y., and in the mountains to Ga.—*Pennsylvania*: NORTHAMPTON; MONROE; SCHUYLKILL; CENTRE; BLAIR; CAMERON; SUSQUEHANNA.

30. *Aster dumosus* L. BUSHY ASTER. (Man. p. 961; I. F. f. 3791.) Sandy soil, Me. to western N. Y., Ont., Fla., La. and Mo.—*Pennsylvania*: NORTHAMPTON, Bethlehem; CHESTER; LANCASTER; ALLEGHENY.

30a. *A. dumosus foliosus* (Ait.) A. Gray.—DAUPHIN.

30b. *A. dumosus strictior* T. & G. (Man. p. 961.)—MONTGOMERY; LANCASTER; LEBANON.

31. *Aster salicifolius* Lam. WILLOW ASTER. (Man. p. 962; I. F. f. 3792.) In moist soil, Me. and Ont. to Mass. and Fla., west to Mont., Mo. and Tex.—*Pennsylvania*: NORTHAMPTON; LANCASTER; DAUPHIN; HUNTINGDON; BUCKS; ALLEGHENY.

31a. *A. salicifolius subasper* (Lindl.) A. Gray. (Man. p. 962.)—NORTHAMPTON; HUNTINGDON.

32. *Aster paniculatus* Lam. PANICLED ASTER. (Man. p. 962; I. F. f. 3793.) In moist soil, N. B. to western Ont. and Mont., south to N. J., Ky., Fla. and Kans.—*Pennsylvania*: NORTHAMPTON; MONROE; SUSQUEHANNA; LANCASTER; DAUPHIN.

32a. *A. paniculatus bellidiflorus* (Willd.) Burgess. (Man. p. 962.) In moist or wet soil, N. B. to western Ont., N. C., Mo. and Kans.—*Pennsylvania*: DELAWARE.

32b. *A. paniculatus acutidens* Burgess. (Man. p. 962.) NORTHAMPTON.

33. *Aster Tradescanti* L. TRADESCANT'S ASTER. (Man. p. 962; I. F. f. 3795.) In fields and swamps, Ont. to the N. W. Terr., Fla., Ill. and Minn.—*Pennsylvania*: NORTHAMPTON; BUCKS; PERRY; LUZERNE; HUNTINGDON; ALLEGHENY.

34. *Aster Faxonii* Porter. FAXON'S ASTER. (Man. p. 963; I. F. f. 3796.) On moist cliffs, Vt. and Mass. to Pa., west to Wis. (?), south to N. C.—*Pennsylvania*: ERIE, Presque Isle.

35. *Aster ericoides* L. WHITE HEATH ASTER. (Man. p. 963; I. F. f. 3797.) In dry soil, Me. and Ont. to Fla., west to Wis. and Ky.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

35a. *A. ericoides pilosus* (Willd.) Porter. (Man. p. 963.) W. Ont. to Pa. and Ga., west to Minn. and Mo.—LANCASTER.

35b. *A. ericoides depauperatus* Porter. (Man. p. 963.) S. Pa. and W. Va.—LANCASTER, New Texas; CHESTER.

36. *Aster Pringlei* (A. Gray) Britton. PRINGLE'S ASTER. (Man. p. 963; I. F. f. 3798.) On banks, especially in rocky places, Me. to Mass., Vt. and Wis.—*Pennsylvania*: DAUPHIN, Harrisburg; LANCASTER, along Susquehanna.

37. *Aster lateriflorus* (L.) Britton. STARVED OR CALICO ASTER. (Man. p. 963; I. F. f. 3799.) In dry or moist soil, N. S. to western Ont., south to N. C., La. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; SUSQUEHANNA; LYCOMING; HUNTINGDON; BLAIR; ERIE; ALLEGHENY.

37a. *A. lateriflorus glomerellus* (T. & G.) Burgess. (Man. p. 964.) —NORTHAMPTON; LANCASTER; DAUPHIN; BEDFORD.

37b. *A. lateriflorus thyrsoides* (A. Gray) Sheldon. (Man. p. 964.) —NORTHAMPTON; BUCKS.

37c. *A. lateriflorus grandis* Porter. (Man. p. 964.) —NORTHAMPTON; FRANKLIN.

37d. *A. lateriflorus pendulus* (Ait.) Burgess. (Man. p. 964.) —LANCASTER.

37e. *A. lateriflorus horizontalis* (Desf.) Burgess. (Man. p. 964.) —NORTHAMPTON.

38. *Aster hirsuticaulis* Lindl. HAIRY-STEMMED ASTER. (Man. p. 964; I. F. f. 3800.) In woods and thickets, Me. to N. Y., Pa. and Ky.—*Pennsylvania*: ALLEGHENY.

39. *Aster vimineus* Lam. SMALL WHITE ASTER. (Man. p. 964; I. F. f. 3801.) In moist soil, Ont. to Mass., Fla., Minn., Kans. and Ark.—*Pennsylvania*: NORTHAMPTON; LANCASTER; ALLEGHENY.

39a. *A. vimineus* Columbianus Britton. (Man. p. 964.)—NORTHAMPTON; PHILADELPHIA.

40. *Aster multiflorus* Ait. DENSE-FLOWERED ASTER. (Man. p. 964; I. F. f. 3802.) In dry open places, Me. and Ont. to the N. W. Terr. and B. C., south to Ga., Tex. and Ariz.—*Pennsylvania*: NORTHAMPTON; BUCKS; LANCASTER, on the Susquehanna; HUNTINGDON; ALLEGHENY.

41. *Aster tenuifolius* L. PERENNIAL SALT-MARSH ASTER. (Man. p. 965; I. F. f. 3804.) In salt marshes, coast of Mass. to Fla.—*Pennsylvania*: PHILADELPHIA.

42. *Aster subulatus* Michx. ANNUAL SALT-MARSH ASTER. (Man. p. 965; I. F. f. 3806.) In salt marshes, coast of N. H. to Fla.—*Pennsylvania*: PHILADELPHIA.

14. ERIGERON L.

Plants perennial.

Ray-flowers less than 100.

1. *E. pulchellus*.

Ray-flowers over 100.

2. *E. Philadelphicus*.

Plants annual or biennial.

Upper stem-leaves with sharply toothed blades: ray-flowers with pink ligules.

3. *E. annuus*.

Upper stem-leaves with entire blades: ray-flowers with white ligules.

4. *E. ramosus*.

1. *Erigeron pulchellus* Michx. ROBIN'S PLANTAIN. (Man. p. 968; I. F. f. 3819.) On hills and banks, N. S. to Ont., S. Dak., Fla. and La.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; SCHUYLKILL; SOMERSET; ALLEGHENY.

2. *Erigeron Philadelphicus* L. PHILADELPHIA FLEABANE. (Man. p. 968; I. F. f. 3820.) In fields and woods, throughout N. Am., except the extreme north.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; CRAWFORD; DELAWARE; CHESTER; LANCASTER; ERIE; ALLEGHENY.

3. *Erigeron annuus* (L.) Pers. SWEET SCABIOUS. DAISY FLEABANE. (Man. p. 969; I. F. f. 3823.) In fields, N. S. to the N. W. Terr., south to Va., Ky., Kans. and Mo. Nat. in Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; ERIE; ALLEGHENY.

4. *Erigeron ramosus* (Walt.) B.S.P. DAISY FLEABANE. (Man. p. 969; I. F. f. 3824.) In fields, N. S. to the N. W. Terr., south to Fla., La. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

15. LEPTILON Raf.

1. *Leptilon Canadense* (L.) Britton. HORSE-WEED. (Man. p. 970; I. F. f. 3827.) In fields and waste places, throughout N. Am. except the extreme north. In the Old World and in S. Am.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ERIE; ALLEGHENY.

16. **DOELLINGERIA** Nees.

Achenes terete, ribless, less than 1 mm. wide.

Involucral bracts acute or acutish, the inner linear, ciliate at the tip.

1. *D. umbellata*.

Involucral bracts obtuse, the inner oblong, ciliate.

2. *D. humilis*.

Achenes much flattened, ribbed, over 1 mm. wide.

3. *D. infirma*.

1. *Doellingeria umbellata* (Mill.) Nees. TALL FLAT-TOP WHITE ASTER. (Man. p. 970; I. F. f. 3829.) In moist soil, Newf. to Ga., west to the N. W. Terr., Mich. and Ark.—*Pennsylvania*: NORTHAMPTON; MONROE; DELAWARE; CHESTER; PERRY; FRANKLIN; HUNTINGDON; SUSQUEHANNA; ARMSTRONG; ALLEGHENY.

2. *Doellingeria humilis* (Willd.) Britton. BROAD-LEAVED FLAT-TOP WHITE ASTER. (Man. p. 970; I. F. f. 3830.) In moist soil, southern N.J. and Pa. to Fla. and Tex.—*Pennsylvania*: DELAWARE; LANCASTER.

3. *Doellingeria infirma* (Michx.) Greene. CORNEL-LEAVED ASTER. (Man. p. 970; I. F. f. 3831.) In dry, usually rocky soil, Mass. to N. Y., Pa. and Tenn.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY; PERRY.

17. **IONACTIS** Greene.

1. *Ionactis linariifolius* (L.) Greene. SAVORY-LEAVED ASTER. (Man. p. 971; I. F. f. 3832.) In dry or rocky soil, Newf. to Quebec and Fla., west to Minn., Mo. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; BERKS; MONROE; ALLEGHENY.

18. **BACCHARIS** L.

1. *Baccharis halimifolia* L. GROUNDSEL-TREE. (Man. p. 971; I. F. f. 3834.) Along salt marshes and tidal rivers, extending beyond saline influence, Mass. to Fla. and Tex.—*Pennsylvania*: DELAWARE; LANCASTER.

19. **GIFOLA** Cass.

1. *Gifola Germanica* (L.) Dumort. CUDWEED. COTTON ROSE. (Man. p. 972; I. F. f. 3838.) In dry fields, southern N. Y. to Pa. and N. C.—*Pennsylvania*: BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; FRANKLIN; ALLEGHENY.

20. **PLUCHEA** Cass.

1. *Pluchea camphorata* (L.) DC. SPICY OR SALT-MARSH FLEABANE. (Man. p. 973; I. F. f. 3840.) In salt marshes, coast of N. H. to Fla., Tex. and Mex. Also in the W. Indies.—*Pennsylvania*: BUCKS, Bristol.

21. **ANTENNARIA** Gaertn.

Basal leaves relatively small, mainly less than 5 cm. long, 1-ribbed.

Blades of the basal leaves spatulate, abruptly pointed.

1. *A. neodioica*.

Blades of the basal leaves oblanceolate or cuneate, acute or obtusish.

2. *A. neglecta*.

Basal leaves relatively large, mainly over 5 cm. long, 3-5-ribbed.

Plants not glandular: blades of the basal leaves dull and woolly.

3. *A. plantaginifolia*.

Plants glandular: blades of the basal leaves bright and glabrous.

4. *A. Parlinii*.

1. *Antennaria neodioica* Greene. SMALLER CAT'S-FOOT. (Man. p. 975; I. F. f. 3845.) In dry shaded places, Quebec to Vt., Va. and S. Dak.—*Pennsylvania*: NORTHAMPTON; PIKE; FRANKLIN; ALLEGHENY; ERIE; DAUPHIN.

2. *Antennaria neglecta* Greene. FIELD CAT'S-FOOT. (Man. p. 975; I. F. 3846.) In fields and pastures, Me. to N. Y., Va. and Wis.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONROE; DELAWARE; LANCASTER; DAUPHIN.

3. *Antennaria plantaginifolia* (L.) Richards. PLANTAIN-LEAF OR MOUSE-EAR EVERLASTING. (Man. p. 975; I. F. f. 3848.) In dry soil and open woods, Lab., Ont. to Fla., Ill., Kans. and Tex.—*Pennsylvania*: MONROE; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; FRANKLIN; HUNTINGDON; MONROE.

4. *Antennaria Parlinii* Fernald. PARLIN'S CAT'S-FOOT. (Man. p. 976.) In dry soil, Me. and Vt. to D. C.—*Pennsylvania*: BUCKS, Tullytown.

22. ANAPHALIS DC.

1. *Anaphalis margaritacea* (L.) Benth. & Hook. PEARLY EVERLASTING. (Man. p. 977; I. F. f. 3850.) Dry soil, Newf. to Alaska, N. C., Kans. and Calif. Also in northern Asia.—*Pennsylvania*: MONROE; LACKAWANNA; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; MONTOUR; HUNTINGDON; ALLEGHENY.

23. GNAPHALIUM L.

Pappus-bristles distinct, falling away separately.

Erect, tall plants: inflorescence corymbose or paniculate.

Leaves merely sessile: foliage not glandular-viscid. 1. *G. obtusifolium*.

Leaves decurrent on the stem: foliage glandular-viscid.

2. *G. decurrens*.

Diffuse low plants: inflorescence capitate.

3. *G. uliginosum*.

Pappus-bristles united at the base, falling away together. 4. *G. purpureum*.

1. *Gnaphalium obtusifolium* L. FRAGRANT LIFE EVERLASTING. (Man. p. 977; I. F. f. 3851.) In dry, mostly open places, N. S. to Fla., Man., Kans. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; MONTOUR; ALLEGHENY.

2. *Gnaphalium decurrens* Ives. CLAMMY EVERLASTING. (Man. p. 978; I. F. f. 3853.) In open, moist or dry places, N. S. to Pa., west to western Ont.; Mich. and B. C., south in the Rocky Mts. to Ariz.—*Pennsylvania*: LACKAWANNA; MONROE; LUZERNE; FRANKLIN; BLAIR; ERIE; ALLEGHENY.

3. *Gnaphalium uliginosum* L. LOW OR MARSH CUDWEED. (Man. p. 978; I. F. f. 3855.) In damp soil, Newf. to Va., western Ont., Minn. and Ind. Also in Eu.—*Pennsylvania*: MONROE; NORTHAMP-

TON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; YORK; SCHUYLKILL; HUNTINGDON; FRANKLIN; BLAIR; ALLEGHENY.

4. *Gnaphalium purpureum* L. PURPLISH CUDWEED. (Man. p. 978; I. F. f. 3859.) In dry sandy soil, eastern Me. to Fla., west to Pa., W. Va., Ky., Kans., Tex. and Mex. Also on the Pacific coast and in S. Am.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; FRANKLIN; BLAIR; ALLEGHENY.

24. INULA L.

1. *Inula Helenium* L. ELECAMpane. (Man. p. 979; I. F. f. 3861.) On roadsides and in fields, N. S. to Ont. and Minn., south to N. C. and Mo. Nat. from Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; SOMERSET; ERIE; ALLEGHENY.

25. POLYMNIA L.

Ligules of the ray-flowers linear or oblong-linear: achenes striate.

1. *P. Uvedalia*.

Ligules of the ray-flowers flabellate, often very small: achenes 3-ribbed.

2. *P. Canadensis*.

1. *Polymnia Uvedalia* L. LARGE-FLOWERED LEAF-CUP. (Man. p. 979; I. F. f. 3862.) In rich woods, N. Y. to Ind. and Mich., Fla., Mo. and Tex.—*Pennsylvania*: NORTHAMPTON; DELAWARE; CHESTER; BERKS; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Polymnia Canadensis* L. SMALL-FLOWERED LEAF-CUP. (Man. p. 980; I. F. f. 3863.) In damp, rich shaded places, western Ont. to Minn., Ga., Mo. and Ark.—*Pennsylvania*: CHESTER; LANCASTER; YORK; ALLEGHENY.

26. SILPHIUM L.

Leaf-blades entire or merely toothed.

Disk about 1.5 cm. wide during anthesis: leaves connate-perfoliate, merely opposite.

1. *S. perfoliatum*.

Disk about 1 cm. wide during anthesis: leaves not connate, usually in whorls of 3 or 4.

2. *S. trifoliatum*.

Leaf-blades pinnatifid or bipinnatifid.

3. *S. laciniatum*.

1. *Silphium perfoliatum* L. CUP-PLANT. (Man. p. 981; I. F. f. 3865.) In moist soil, southern Ont. to S. Dak., south to Ga., Neb. and La. Nat. eastward.—*Pennsylvania*: PHILADELPHIA; CUMBERLAND.

2. *Silphium trifoliatum* L. WHORLED ROSIN-WEED. (Man. p. 981; I. F. f. 3867.) In woods, Pa. to Ohio, Va. and Ala.—*Pennsylvania*: LANCASTER, Tucquan; HUNTINGDON; CLARION; ELK; ALLEGHENY; FAYETTE.

3. *Silphium laciniatum* L. COMPASS-PLANT. PILOT-WEED. (Man. p. 981; I. F. f. 3869.) On prairies, Pa. to S. Dak., Ala., La., Kans. and Tex.—*Pennsylvania*: ALLEGHENY.

27. CHRYSOGONUM L.

1. *Chrysogonum Virginianum* L. CHRYSOGONUM. (Man. p. 982; I. F. f. 3871.) In dry soil, southern Pa. to Fla.—*Pennsylvania*: LANCASTER; FRANKLIN.

28. **HELIOPSIS** Pers.

Leaf-blades smooth : pappus none or of 2-4 short teeth. 1. *H. helianthoides*
 Leaf-blades rough : pappus crown-like or of 1-3 sharp teeth.

2. *H. scabra*.

1. **Heliopsis helianthoides** (L.) B.S.P. FALSE SUNFLOWER. (Man. p. 984; I. F. f. 3878.) In open places, Ont. to Fla., west to Ill. and Ky.—*Pennsylvania* : NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LYCOMING; FRANKLIN; FULTON; FAYETTE; WASHINGTON; ALLEGHENY; ARMSTRONG; ERIE.

2. **Heliopsis scabra** Dunal. ROUGH OX-EYE. (Man. p. 984; I. F. f. 3879.) Usually in dry soil, Me. to N. Y., N. J., Ill., B. C., Kans. and Ark.—*Pennsylvania* : NORTHAMPTON; LANCASTER.

29. **ECLIPTA** L.

1. **Eclipta alba** (L.) Hassk. ECLIPTA. (Man. p. 984; I. F. f. 3880.) Along streams and in waste places, southern N. Y. to Ill. and Neb., south to Fla., Tex. and Mex. Nat. from tropical America.—*Pennsylvania* : BUCKS; PHILADELPHIA; BERKS; DELAWARE; LANCASTER; YORK.

30. **RUDBECKIA** L.

Disk ovoid or globular, purple or dark brown.

Lower leaves with 3-5-lobed or 3-5-divided blades : bractlets of the receptacle slender-tipped. 1. *R. triloba*.

Lower leaves with entire or merely toothed blades : bractlets of the disk not slender-tipped.

Stigma-tips subulate.

Involucre of narrow bracts much shorter than the ligules of the ray-flowers. 2. *R. hirta*.

Involucre of foliaceous bracts as long as the ligules of the ray-flowers or longer. 3. *R. Brittonii*.

Stigma-tips obtuse.

Upper stem-leaves with entire or inconspicuously toothed blades.

4. *R. fulgida*.

Upper stem-leaves with laciniately or coarsely toothed blades.

5. *R. speciosa*.

Disk cylindric or conic, yellowish or gray.

6. *R. laciniata*.

1. **Rudbeckia triloba** L. THIN-LEAVED CONE-FLOWER. (Man. p. 986; I. F. f. 3883.) In moist soil, N. J. to Ga., west to Mich., Kans. and La.—*Pennsylvania* : FRANKLIN, near Chambersburg; DELAWARE.

2. **Rudbeckia hirta** L. BLACK-EYED SUSAN. YELLOW DAISY. (Man. p. 986; I. F. f. 3858.) In fields, Quebec to western Ont. and the N. W. Terr., south to Fla., Colo. and Tex.—*Pennsylvania* : NORTHAMPTON; BUCKS; CRAWFORD; DELAWARE; CHESTER; LANCASTER; COLUMBIA; TIOGA; ERIE; ALLEGHENY.

3. **Rudbeckia Brittonii** Small. BRITTON'S CONE-FLOWER. (Man. p. 987; I. F. f. 3886.) In woods, mountains of Pa. to Va. and Tenn.—*Pennsylvania* : HUNTINGDON; LANCASTER.

4. **Rudbeckia fulgida** Ait. ORANGE CONE-FLOWER. (Man. p. 987;

I. F. f. 3887.) In dry or stony soil, N. J. and eastern Pa. to N. C.—*Pennsylvania*: DELAWARE; CHESTER; LANCASTER; LEBANON.

5. *Rudbeckia speciosa* Wenderoth. SHOWY CONE-FLOWER. (Man. p. 987; I. F. f. 3889.) In moist soil, N. J. to Mich., south to Ala. and Ark.—*Pennsylvania*: PHILADELPHIA, on the Wissahickon; CHESTER.

6. *Rudbeckia laciniata* L. TALL CONE-FLOWER. (Man. p. 988; I. F. f. 3890.) In moist thickets, Quebec to Man. and Mont., south to Fla., Kans. and N. Mex.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; YORK; FRANKLIN; ERIE; ALLEGHENY.

31. HELIANTHUS L.

Disk purple, purplish or brown.

Perennial plants: disk convex.

1. *H. angustifolius*.

Annual plants: disk flat or nearly so.

Bracts of the involucre ovate, hispid and ciliate: leaf-blades toothed.

2. *H. annuus*.

Bracts of the involucre lanceolate, canescent: leaf-blades entire or nearly so.

3. *H. petiolaris*.

Disk yellow or yellowish.

Leaf-blades prevailingly of a lanceolate type, sometimes elongated.

Involucre less than 10 mm. thick: leaf-blades thin. 4. *H. microcephalus*.

Involucre over 10 mm. thick: leaf-blades relatively thick.

Stem scabrous to hispid.

Leaf-blades scabrous above, hirsute beneath.

5. *H. giganteus*.

Leaf-blades scabrous on both sides.

6. *H. Maximilianii*.

Stem smooth and glabrous.

Leaf-blades narrowly lanceolate, narrowed into petiole-like bases.

7. *H. grosse-serratus*.

Leaf-blades broadly lanceolate, sessile or nearly so by the truncate or subcordate base.

8. *H. divaricatus*.

Leaf-blades prevailingly of an ovate or ovate-lanceolate type.

Leaf-blades sessile or nearly so.

Stem glabrous: leaves spreading.

8. *H. divaricatus*.

Stem densely pubescent: leaves ascending.

9. *H. mollis*.

Leaf-blades petioled or narrowed into petiole-like bases.

Stem glabrous or merely puberulent.

Leaf-blades membranous, markedly toothed, slender-petioled.

10. *H. decapetalus*.

Leaf-blades firmer: shallowly toothed or entire, short-petioled.

Bracts of the involucre much longer than the disk.

11. *H. trachelifolius*.

Bracts of the involucre about as long as the disk.

12. *H. strumosus*.

Stem hirsute, hispid or scabrous-pubescent.

Leaf-blades rounded or truncate at the base, short-petioled.

13. *H. hirsutus*.

Leaf-blades, at least those of the upper leaves, narrowed at the base, relatively long-petioled.

14. *H. tuberosus*.

1. *Helianthus angustifolius* L. NARROW-LEAVED SUNFLOWER. (Man. p. 991; I. F. f. 3898.) In swamps, southeastern N. Y. to Fla., Ky. and Tex., but mainly near the coast.—*Pennsylvania*: BUCKS, Tullytown.

2. *Helianthus annuus* L. COMMON SUNFLOWER. (Man. p. 991; I. F. f. 3900.) On prairies and in waste places, Minn. to the N. W. Terr., Mo. and Tex. Escaped in the east.—*Pennsylvania*: NORTHAMPTON; ALLEGHENY.

3. *Helianthus petiolaris* Nutt. PRAIRIE SUNFLOWER. (Man. p. 992; I. F. f. 3901.) On dry prairies, Minn. and the N. W. Terr. and Ore., south to Mo. and Ariz. and sparingly eastward.—*Pennsylvania*: ERIE, Presque Isle; NORTHAMPTON, Bethlehem.

4. *Helianthus microcephalus* T. & G. SMALL WOOD SUNFLOWER. (Man. p. 993; I. F. f. 3906.) In moist woods and along streams, Pa. to Ga., west to Ohio, Mo. and La.—*Pennsylvania*: GREENE; FAYETTE; ALLEGHENY; ARMSTRONG.

5. *Helianthus giganteus* L. TALL SUNFLOWER. (Man. p. 993; I. F. f. 3907.) In swamps and wet meadows, Me. and Ont. to the N. W. Terr., south to Fla., Neb. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LEBANON; PERRY; FAYETTE; ARMSTRONG.

6. *Helianthus Maximilianii* Schrad. MAXIMILIAN'S SUNFLOWER. (Man. p. 993; I. F. f. 3908.) On dry prairies, Minn. and Man. to the N. W. Terr., Neb. and Tex. —*Pennsylvania*: ALLEGHENY.

7. *Helianthus grosse-serratus* Martens. SAW-TOOTH SUNFLOWER. (Man. p. 994; I. F. f. 3909.) In open places, eastern L. I. to Pa., S. Dak., Mo. and Tex.—*Pennsylvania*: ERIE, Union City; ALLEGHENY.

8. *Helianthus divaricatus* L. ROUGH OR WOODLAND SUNFLOWER. (Man. p. 994; I. F. f. 3910.) In dry woodlands, Me. to the N. W. Terr., south to Fla., Neb. and La.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

9. *Helianthus mollis* Lam. HAIRY SUNFLOWER. (Man. p. 994; I. F. f. 3911.) In dry soil, Ohio to Ga., Iowa, Kans. and Tex., and naturalized eastward.—*Pennsylvania*: DELAWARE, Tinicum; ALLEGHENY.

10. *Helianthus decapetalus* L. THIN-LEAVED SUNFLOWER. (Man. p. 994; I. F. f. 3913.) In moist woods and along streams, Quebec to Mich., Ga. and Ky.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; COLUMBIA; ALLEGHENY; WASHINGTON.

11. *Helianthus trachelifolius* Mill. THROATWORT SUNFLOWER. (Man. p. 995; I. F. f. 3914.) In dry soil, Pa. to Ohio to Wis.—*Pennsylvania*: NORTHAMPTON; BUCKS; WESTMORELAND; DELAWARE.

12. *Helianthus strumosus* L. PALE-LEAVED WOOD SUNFLOWER. (Man. p. 995; I. F. f. 3915.) In dry woods and on banks, Me. and Ont. to Minn., Ga. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; YORK; ERIE; ALLEGHENY.

12a. *H. strumosus macrophyllus* (Willd.) Britton. (Man. p. 995.) Mass. to Pa., Iowa and Miss.—NORTHAMPTON; LANCASTER.

13. *Helianthus hirsutus* Raf. STIFF-HAIRED SUNFLOWER. (Man. p. 995; I. F. f. 3916.) In dry soil, Pa. and Ohio to Wis., south to W. Va., Ga., Kans. and Tenn.—*Pennsylvania*: NORTHAMPTON; MONROE; ALLEGHENY.

14. *Helianthus tuberosus* L. JERUSALEM ARTICHOKE. (Man. p. 996; I. F. f. 3919.) In moist soil, N. B. and Ont. to the N. W. Terr., south to Ga., Kans. and Ark.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; LUZERNE; ALLEGHENY.

32. VERBESINA L.

Disk convex: bracts of the involucre closely imbricated, not deflexed.

Leaves alternate: ray-flowers with white corollas. 1. *V. Virginica*.

Leaves opposite: ray-flowers with yellow corollas. 2. *V. occidentalis*.

Disk globular: bracts of the involucre lax, soon deflexed. 3. *V. alternifolia*.

1. *Verbesina Virginica* L. VIRGINIA CROWNBEARD. (Man. p. 996; I. F. f. 3920.) In dry soil, Pa. to Va., Ill. and Kans., south to Fla. and Tex.—*Pennsylvania*: FRANKLIN.

2. *Verbesina occidentalis* (L.) Walt. SMALL YELLOW CROWNBEARD. (Man. p. 996; I. F. f. 3921.) In dry thickets and on hillsides, Md. and southern Pa. to Ill., Fla. and Ga.—*Pennsylvania*: BEDFORD.

3. *Verbesina alternifolia* (L.) Britton. ACTINOMERIS. (Man. p. 997; I. F. f. 3924.) In rich soil, N. J. to western N. Y., Iowa, Fla., Kans. and La.—*Pennsylvania*: NORTHAMPTON; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; HUNTINGDON; ARMSTRONG; ALLEGHENY.

33. COREOPSIS L.

Ligules of the ray-flowers pink: leaf-blades entire. 1. *C. rosea*.

Ligules of the ray-flowers yellow, sometimes brown at the base: leaf-blades, at least some of them, with lateral divisions.

Ray-flowers with the ligules brown at the base. 2. *C. tinctoria*.

Ray-flowers with the ligules yellow throughout.

Leaf-blades mostly with several very small divisions near the base of the large terminal division. 3. *C. auriculata*.

Leaf-blades divided into relatively equal divisions.

Leaf-blades sessile, the primary divisions again divided into very narrowly linear segments. 4. *C. verticillata*.

Leaf-blades petioled, the primary divisions entire. 5. *C. tripteris*.

1. *Coreopsis rosea* Nutt. SMALL ROSE TICKSEED. (Man. p. 998; I. F. f. 3925.) In open swamps, eastern Mass. to Ga., near the coast.—*Pennsylvania*: BUCKS, Bristol.

2. *Coreopsis tinctoria* Nutt. GARDEN TICKSEED. (Man. p. 998; I. F. f. 3927.) In moist soil, Minn. to the N. W. Terr., south to Neb., La. and Ariz. Naturalized eastward.—*Pennsylvania*: NORTHAMPTON.

3. *Coreopsis auriculata* L. RUNNING TICKSEED. (Man. p. 999; I. F. f. 3935.) In woods, Va. to Ky., south to Fla. and La.—*Pennsylvania*: PHILADELPHIA, Bartram's Garden.

4. *Coreopsis verticillata* L. WHORLED TICKSEED. (Man. p. 999; I. F. f. 3931.) In dry soil, western Ont. to northern Mich., Md., N. C., Ky., Neb. and Ark.—*Pennsylvania*: NORTHAMPTON, escaped.

5. *Coreopsis tripteris* L. TALL TICKSEED. (Man. p. 999; I. F. f. 3937.) In moist woods and thickets, Pa. to Wis., Kans., Va., Fla. and La.—*Pennsylvania*: LANCASTER; YORK; PERRY; ELK; WESTMORELAND; ARMSTRONG; LYCOMING; CLARION; ALLEGHENY.

34. *BIDENS* L.

Terrestrial plants: leaf-blades simple, toothed or divided.

Leaf-blades serrate or rarely lobed.

Ray-flowers with conspicuous ligules twice as long as the disk or more.

1. *B. laevis*.

Ray-flowers with very short ligules, or wanting.

Heads nodding, at least after anthesis.

2. *B. cernua*.

Heads persistently erect.

Pappus-awns downwardly barbed.

Bracts of the involucre not foliaceous: corollas orange: stems purple.

3. *B. connata*.

Bracts of the involucre foliaceous: corollas greenish yellow: stem straw-colored.

4. *B. comosa*.

Pappus-awns upwardly barbed.

5. *B. bidentoides*.

Leaf-blades, at least some of them, pinnately 1-3-parted or 1-3-divided.

Ligules of the ray-flowers inconspicuous, rudimentary or wanting.

Achenes flat.

Outer bracts of the involucre 4-8: achenes nearly black.

Achenes 4-4.5 mm. long, the awns very short: outer bracts 4.

6. *B. discoidea*.

Achenes about 6 mm. long, the awns $\frac{1}{2}$ as long as the body: outer bracts 6-8.

7. *B. frondosa*.

Outer bracts of the involucre 10-16: achenes brown.

8. *B. vulgata*.

Achenes acerose.

9. *B. bipinnata*.

Ligules of the ray-flowers large and conspicuous.

Achenes obovate, very flat.

10. *B. involucreta*.

Achenes cuneate or linear-cuneate.

11. *B. trichosperma*.

Aquatic plant: leaf-blades, at least those of submersed leaves, filiformly dissected.

12. *B. Beckii*.

1. *Bidens laevis* (L.) B.S.P. LARGER BUR-MARIGOLD. (Man. p. 1000; I. F. f. 3938.) In swamps and wet meadows, Mass. to N. C. and western N. Y.—*Pennsylvania*: BUCKS; DELAWARE.

2. *Bidens cernua* L. SMALLER BUR-MARIGOLD. (Man. p. 1001; I. F. f. 3939.) In wet soil, N. S. to Hudson Bay and B. C., south to N. C., Mo. and Calif. Also in Eu. and Asia.—*Pennsylvania*: PIKE; NORTHAMPTON; DELAWARE; LANCASTER; ARMSTRONG.

3. *Bidens connata* Muhl. PURPLE STEMMED SWAMP BEGGAR-TICKS. (Man. p. 1001; I. F. f. 3940.) In swamps or moist soil, N. S. to the N. W. Terr., south to Del., Ga., Ky. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN.

4. *Bidens comosa* (A. Gray) Wiegand. LEAFY-BRACTED TICKSEED. (Man. p. 1001; I. F. f. 3941.) In wet soil, southern N. Y. and Mass. to Ill.—*Pennsylvania*: NORTHAMPTON; BUCKS; MONTGOMERY; LANCASTER.

5. *Bidens bidentoides* (Nutt.) Britton. SWAMP BEGGAR-TICKS. (Man. p. 1001; I. F. f. 3942.) Muddy shores, Pa., N. J., Del. and Md.—*Pennsylvania*: BUCKS, Bristol; DELAWARE, Tinicum.

6. *Bidens discoidea* (T. & G.) Britton. SMALL BEGGAR-TICKS. (Man. p. 1002; I. F. f. 3943.) In swamps and wet places, Conn. to Va., Ohio, Mich., La. and Tex.—*Pennsylvania*: NORTHAMPTON, on Delaware above Easton; LUZERNE, Lily Lake.

7. *Bidens frondosa* L. BLACK BEGGAR-TICKS. (Man. p. 1002.) In moist soil, N. B. to Fla., Neb. and Tex.—*Pennsylvania*: NORTHAMPTON; PERRY; BUCKS; BLAIR; DELAWARE.

8. *Bidens vulgata* Greene. TALL BEGGAR-TICKS. (Man. p. 1002; I. F. f. 3944.) In moist soil, Ont. to B. C., N. C. and Calif.—*Pennsylvania*: NORTHAMPTON; BUCKS.

9. *Bidens bipinnata* L. SPANISH NEEDLES. (Man. p. 1002; I. F. f. 3945.) In various situations, R. I. to Fla., west to Ohio, Neb. and Ariz. Also in Mex. and tropical Am., and introd. in southern Eu. and Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

10. *Bidens involucrata* (Nutt.) Britton. LONG-BRACTED TICKSEED-SUNFLOWER. (Man. p. 1003; I. F. f. 3949.) In swamps, Ill. to Kans., Ark. and Tex.—*Pennsylvania*: DELAWARE, Tinicum.

11. *Bidens trichosperma* (Michx.) Britton. TALL TICKSEED-SUNFLOWER. (Man. p. 1002; I. F. f. 3947.) In swamps and wet meadows, Mass. to Ga., Ill. and Ky.—*Pennsylvania*: BUCKS, Bristol; DELAWARE, Tinicum; MERCER.

12. *Bidens Beckii* Torr. WATER MARIGOLD. (Man. p. 1003; I. F. f. 3950.) In ponds and streams, Quebec to N. J., west to Man. and Mo.—*Pennsylvania*: ERIE, Presque Isle.

35. GALINSOGA R. & P.

1. *Galinsoga parviflora* Cav. GALINGOSA. (Man. p. 1004; I. F. f. 3954.) In waste places, eastern Mass. to Ore., N. C., Kans. and Mex. Nat. from tropical Am.—*Pennsylvania*: NORTHAMPTON, Bethlehem; BUCKS; DELAWARE; CHESTER; DAUPHIN; LANCASTER; FRANKLIN; COLUMBIA; YORK; HUNTINGDON; LUZERNE; LEBANON; ALLEGHENY.

1a. *G. parviflora hispida* DC. (Man. p. 1004.)—NORTHAMPTON; BUCKS; PHILADELPHIA.

36. MARSHALLIA Schreb.

1. *Marshallia grandiflora* Beadle and Boynton. GREAT MARSHALLIA. In dry soil, Pa. to N. C.—*Pennsylvania*: FAYETTE.

37. HELENIUM L.

Disk yellow : ray-flowers fruit-producing.

1. *H. autumnale*.

Disk purple-brown : ray-flowers neutral.

2. *H. nudiflorum*.

1. *Helenium autumnale* L. SNEEZEWEED. OX-EYE. (Man. p. 1010; I. F. f. 3972.) In swamps and wet meadows, Quebec to Conn., Fla., S. Dak., Kans. and Ala.—*Pennsylvania* : NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; PERRY; DAUPHIN; FRANKLIN; ERIE; ALLEGHENY.

2. *Helenium nudiflorum* Nutt. PURPLE HEAD SNEEZEWEED. (Man. p. 1010; I. F. f. 3973.) In moist soil, Kans. to Ill., Tex., east to Pa. and Fla.—*Pennsylvania* : PHILADELPHIA; DELAWARE.

38. ACHILLEA L.

1. *Achillea Millefolium* L. YARROW. MILFOIL. (Man. p. 1013; I. F. f. 3983.) In various situations. Native of Eu. and Asia.—*Pennsylvania* : NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; MONROE; ERIE; ALLEGHENY.

39. ANTHEMIS L.

Ray-flowers neutral : plant glabrous or nearly so.

1. *A. Cotula*.

Ray-flowers pistillate : plants copiously pubescent.

2. *A. arvensis*.

1. *Anthemis Cotula* L. MAYWEED. (Man. p. 1014; I. F. f. 3984.) In fields and waste places, all over N. Am., except the extreme north. Nat. from Eu.—*Pennsylvania* : MONROE; SCHUYLKILL; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Anthemis arvensis* L. CORN OR FIELD CAMOMILE. (Man. p. 1014; I. F. f. 3985.) In fields and waste places, N. S. to Va., west to Mich., Mo., and on the Pacific Coast. Nat. from Eu.—*Pennsylvania* : MONROE; NORTHAMPTON; BUCKS; CHESTER; LANCASTER; FRANKLIN; ERIE.

40. CHRYSANTHEMUM L.

Heads few or solitary : ligules of the ray-flowers linear. 1. *C. Leucanthemum*.

Heads numerous, corymbose : ligules of the ray-flowers oval or obovate.

2. *C. Parthenium*.

1. *Chrysanthemum Leucanthemum* L. WHITE OR OX-EYE DAISY. (Man. p. 1015; I. F. f. 3988.) In meadows and waste places. Nat. from Eu.—*Pennsylvania* : NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; TIOGA; ALLEGHENY.

2. *Chrysanthemum Parthenium* (L.) Pers. COMMON FEVERFEW. (Man. p. 1015; I. F. f. 3990.) In waste places, N. B. and Ont. to N. J., and locally in the interior, mostly escaped. Nat. or adv. from Eu.—*Pennsylvania* : NORTHAMPTON; LANCASTER; MONROE; ALLEGHENY.

41. MATRICARIA L.

Heads 16-25 mm. wide : ray-flowers present.

1. *M. Chamomilla*.

Heads 6-8 mm. wide : ray-flowers wanting.

2. *M. matricarioides*.

1. *Matricaria Chamomilla* L. WILD OR GERMAN CAMOMILE. (Man. p. 1016; I. F. f. 3994.) In waste places and on ballast, southern N. Y. to Pa. Adv. or fugitive from Eu.—*Pennsylvania* : PHILADELPHIA.

2. *Matricaria matricarioides* (Less.) Porter. RAYLESS CAMOMILE. (Man. p. 1016; I. F. f. 3995.) In waste places and on ballast, Mont. to Mo., Me. and Mass. Adv. from the Pacific coast.—*Pennsylvania*: PHILADELPHIA, Pt. Breeze.

42. TANACETUM L.

1. *Tanacetum vulgare* L. TANSY. (Man. p. 1016; I. F. f. 3996.) Along roadsides, mostly escaped, N. S. and Ont. to S. Dak., south to N. C., Mo. and Kans. Nat. from Eu.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; DAUPHIN; PERRY; FRANKLIN; LYCOMING; TIOGA; ALLEGHENY.

43. ARTEMISIA L.

Heads with the central flowers perfect but not fruit-producing.

Leaves glabrous or nearly so: involucre about 2 mm. broad.

1. *A. caudata*.

Leaves silky-pubescent: involucre about 4 mm. broad.

2. *A. Canadensis*.

Heads with the central flowers perfect and fruit-producing.

Receptacle markedly villous.

3. *A. Absinthium*.

Receptacle glabrous or essentially so.

Leaves glabrous, or if pubescent, green, not tomentose.

Involucre about 4 mm. broad: perennial plant.

4. *A. Abrotanum*.

Involucre about 2 mm. broad: annual plants.

Heads scattered: involucre about 1 mm. high.

5. *A. annua*.

Heads crowded: involucre about 2 mm. high.

6. *A. biennis*.

Leaves densely white-canescens or tomentose, at least beneath.

Involucre fully 3 mm. high: leaves green above;

blades pinnatifid or pinnately parted.

7. *A. vulgaris*.

Involucre less than 2 mm. high: leaves pale on both

sides; blades finely dissected.

8. *A. Pontica*.

1. *Artemisia caudata* Michx. TALL OR WILD WORMWOOD. (Man. p. 1018; I. F. f. 3998.) In dry sandy soil, on sea beaches, Quebec to Fla., Man., Neb. and Tex.—*Pennsylvania*: ERIE, Presque Isle.

2. *Artemisia Canadensis* Michx. CANADA WORMWOOD. (Man. p. 1018; I. F. f. 4000.) In rocky soil, Hudson Bay to northern Me. and Vt., west to Minn., Man., the Canadian Pacific coast, south to Ariz. and Neb.—*Pennsylvania*: ERIE, Presque Isle.

3. *Artemisia Absinthium* L. COMMON WORMWOOD. (Man. p. 1019; I. F. f. 4005.) In waste places, Newf. and Hudson Bay to Mass., western Ont., Mont. and N. C. Nat. or adv. from Eu.—*Pennsylvania*: ALLEGHENY.

4. *Artemisia Abrotanum* L. SOUTHERNWOOD. (Man. p. 1019; I. F. f. 4006.) In waste places, Mass. to N. C., Ont. and Neb. Adv. from Eu.—*Pennsylvania*: ALLEGHENY.

5. *Artemisia annua* L. ANNUAL WORMWOOD. (Man. p. 1019; I. F. f. 4007.) In waste places, Ont. to D. C., Tenn., Ark. and Kans. Adv. or nat. from Asia.—*Pennsylvania*: NORTHAMPTON; BUCKS; DELAWARE.

6. *Artemisia biennis* Willd. BIENNIAL WORMWOOD. (Man. p. 1019; I. F. f. 4008.) Nat. in the N. W. Terr. and the northwestern U.

S., now distributed as a weed from Man. to N. S., south to Kans., Ky. and Pa.—*Pennsylvania*: ERIE, Presque Isle; BLAIR, Hollidaysburg; PHILADELPHIA.

7. *Artemisia vulgaris* L. COMMON MUGWORT. (Man. p. 1019; I. F. f. 4010.) In waste places, N. S. to Ont., Mich., N. C. and Pa. Nat. from Eu. Native also of Asia.—*Pennsylvania*: WAYNE; MONROE, Tannersville; NORTHAMPTON, Bethlehem; PHILADELPHIA; ALLEGHENY.

8. *Artemisia Pontica* L. ROMAN WORMWOOD. (Man. p. 1020; I. F. f. 4011.) On hillsides, Pa. and N. J. Fugitive or adv. from Eu.—*Pennsylvania*: LUZERNE, Lily Lake.

44. TUSSILAGO L.

1. *Tussilago Farfara* L. COLTSFOOT. COUGHWORT. (Man. p. 1021; I. F. f. 4019.) In moist soil, along roadsides, etc., N. S. and N. B. to Mass., N. Y. and Minn. Nat. from Eu.—*Pennsylvania*: MONROE, Tannersville; NORTHAMPTON, Bethlehem; SUSQUEHANNA; PHILADELPHIA; ERIE.

45. PETASITES Gaertn.

1. *Petasites Petasites* (L.) Karst. BUTTER-BUR. BUTTERFLY DOCK. (Man. p. 1022; I. F. f. 4023.) In cultivated and waste grounds, eastern Pa. Nat. from Eu. Native of northern Asia.—*Pennsylvania*: NORTHAMPTON, Bangor; BUCKS, near Quakertown; PHILADELPHIA; DELAWARE.

46. ARNICA L.

1. *Arnica acaulis* (Walt.) B.S.P. LEOPARD'S-BANE. (Man. p. 1022; I. F. f. 4024.) In low woods, Del. and southeastern Pa. to Fla.—*Pennsylvania*: CHESTER; LANCASTER, New Texas.

47. ERECHTITES Raf.

1. *Erechtites hieracifolia* (L.) Raf. FIRE-WEED. (Man. p. 1023; I. F. f. 4028.) In woodlands, thickets and waste places, very abundant after fires, Newf. to Fla., west to the N. W. Terr., Neb. and La. Also in Mex. and S. America.—*Pennsylvania*: LACKAWANNA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ERIE; ALLEGHENY.

48. MESADENIA Raf.

Leaf-blades repand-dentate: stem grooved, green.

1. *M. reniformis*.

Leaf-blades angulate-lobed: stem terete, glaucous.

2. *M. atriplicifolia*.

1. *Mesadenia reniformis* (Muhl.) Raf. GREAT INDIAN PLAIN-TAIN. (Man. p. 1024; I. F. f. 4029.) In woods, N. J. and Pa. to Minn., south to N. C. and Tenn.—*Pennsylvania*: NORTHAMPTON; YORK; LANCASTER; PERRY; ALLEGHENY.

2. *Mesadenia atriplicifolia* (L.) Raf. PALE INDIAN PLAIN-TAIN. (Man. p. 1040; I. F. f. 4030.) In woods, western Ont. to Minn., south

to Fla., Mo., and Kans. Rare or absent near the coast.—*Pennsylvania*: BUCKS; CHESTER; NORTHAMPTON; HUNTINGDON; ERIE; ALLEGHENY.

49. *SYNOSMA* Raf.

1. *Synosma suaveolens* (L.) Raf. SWEET-SCENTED INDIAN PLANTAIN. (Man. p. 1024; I. F. f. 4032.) In woods, Conn., and N. J. to Ill. and Minn., south to Fla., W. Va. and Ky.—*Pennsylvania*: LANCASTER; YORK; FAYETTE; ALLEGHENY.

50. *SENECIO* L.

Heads conspicuously radiate (with individual exceptions in *S. obovatus* and *S. aureus*).

Basal and lower cauline leaves with blades narrowed at the base.

Blades of the basal and lower cauline leaves predominantly spatulate or obovate. 1. *S. obovatus*.

Blades of the basal and lower cauline leaves predominantly oblong or elliptic.

Blades of some of the basal and lower cauline leaves pinnatifid.

2. *S. Balsamitae*.

Blades of all the basal and lower cauline leaves merely toothed.

3. *S. Crawfordii*.

Basal and lower cauline leaves with cordate or subcordate blades.

4. *S. aureus*.

Heads discoid or essentially so, the ray-flowers wanting or obsolete.

Plant glabrous or merely puberulent: achenes canescent.

Involucre fully 4 mm. thick, with several scales at the base.

5. *S. vulgaris*.

Involucre less than 4 mm. thick, almost without scales at the base.

6. *S. sylvaticus*.

Plant viscid-pubescent: achenes glabrous.

7. *S. viscosus*.

1. *Senecio obovatus* Muhl. ROUND-LEAF SQUAW-WEED. (Man. p. 1027; I. F. f. 4041.) In moist soil and on banks, N. S. to Fla., west to Ont., Mich., Ky. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; FRANKLIN.

1a. *S. obovatus elongatus* (Pursh) Britton. (Man. p. 1027.)—NORTHAMPTON, Easton.

2. *Senecio Balsamitae* Muhl. BALSAM GROUNDSEL. (Man. p. 1027; I. F. f. 4043.) In dry or rocky soil, N. S. to N. C., west to Wash., B. C., Tex. and Neb.—*Pennsylvania*: MONROE; NORTHAMPTON; BUCKS; MONTGOMERY; DELAWARE; CHESTER; ALLEGHENY.

3. *Senecio Crawfordii* Britton. CRAWFORD'S SQUAW-WEED. (Man. p. 1027.) Eastern Pa.—*Pennsylvania*: BUCKS, Tullytown.

4. *Senecio aureus* L. GOLDEN RAGWORT. (Man. p. 1028; I. F. f. 4047.) In swamps and wet meadows, Newf. to Fla., west to Ont., Mo. and Tex.—*Pennsylvania*: Throughout the State.

4a. *S. aureus gracilis* (Pursh) Britton. (Man. p. 1028.) In wet soil, R. I. to Mich., S. Dak., Va. and Mo.—BUCKS; LANCASTER; NORTHAMPTON.

5. *Senecio vulgaris* L. COMMON GROUNDSEL. (Man. p. 1029; I. F. f. 4053.) In cultivated ground and waste places, Newf. and Hudson Bay

to Va., west to Minn. and Mich. Also on Pacific coast. Nat. from Eu.—*Pennsylvania*: PHILADELPHIA; MONROE, Tobyhanna; FRANKLIN.

6. *Senecio sylvaticus* L. WOOD GROUNDSEL. (Man. p. 1029; I. F. f. 4052.) In waste places, N. S. and Prince Edward Island. Also on the coast of Calif. and B. C. Nat. or adv. from Eu.—*Pennsylvania*: PHILADELPHIA, ballast.

7. *Senecio viscosus* L. FETID OR VISCOUS GROUNDSEL. (Man. p. 1029; I. F. f. 4054.) In waste places and on ballast near the coast, N. B. to N. C.—*Pennsylvania*: PHILADELPHIA, ballast.

51. ARCTIUM L.

Bracts of the involucre glabrous or nearly so.

1. *A. minus*.

Bracts of the involucre copiously woolly.

2. *A. tomentosum*.

1. *Arctium minus* Schk. COMMON BURDOCK. (Man. p. 1030; I. F. f. 4057.) In waste places, throughout eastern North America. Nat. from Eu.—*Pennsylvania*: Common throughout the State.

2. *Arctium tomentosum* (Lam.) Schk. WOOLLY OR COTTONY BURDOCK. (Man. p. 1030; I. F. f. 4055.) In waste places, N. B. to Mass. and southern N. Y. Adv. from Eu.—*Pennsylvania*: DELAWARE.

52. CARDUUS L.

Pappus-bristles, at least those of the inner flowers, plumose.

Bracts of the involucre, at least the outer ones, strongly prickly-armed.

Leaves glabrous or hispid above, tomentose beneath.

Outer and inner bracts of the involucre prickly-armed: naturalized plant.

1. *C. lanceolatus*.

Outer bracts of the involucre prickly-armed, the inner merely acuminate: native plants.

Leaf-blades toothed or pinnately lobed.

2. *C. altissimus*.

Leaf-blades deeply pinnatifid.

3. *C. discolor*.

Leaves green on both sides, or somewhat pubescent beneath.

4. *C. odoratus*.

Bracts of the involucre not prickly-tipped or scarcely so.

Heads relatively large: involucre about 2 cm. thick or more: flowers perfect and fruit producing.

Heads sessile in an involucre of very spiny bracts.

5. *C. spinosissimus*.

Heads peduncled, not involucre.

6. *C. nuticus*.

Heads relatively small: involucre about 1 cm. thick: flowers dioecious.

7. *C. arvensis*.

Pappus-bristles smooth or minutely serrulate.

Head solitary, nodding: bracts of the involucre lanceolate.

8. *C. nutans*.

Head clustered, erect or ascending: bracts of the involucre linear.

9. *C. crispus*.

1. *Carduus lanceolatus* L. COMMON BUR OR SPEAR THISTLE. (Man. p. 1031; I. F. f. 4058.) In fields and waste places, Newf. to Ga., west to Minn., Neb. and Mo. Nat. from Europe. Nat. also from Asia.—*Pennsylvania*: LACKAWANNA; MONROE; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; FRANKLIN; HUNTINGDON; ALLEGHENY.

2. *Carduus altissimus* L. TALL OR ROADSIDE THISTLE. (Man. p. 1031; I. F. f. 4059.) In fields and thickets, Mass. to Minn., Fla., Neb. and Tex.—*Pennsylvania*: BUCKS; DELAWARE; CHESTER; LANCASTER; YORK; BEDFORD; ALLEGHENY.

3. *Carduus discolor* (Muhl.) Nutt. FIELD THISTLE. (Man. p. 1031; I. F. f. 4060.) In fields and along roadsides, Quebec and Ont. to Ga., Minn., Neb. and Mo.—*Pennsylvania*: NORTHAMPTON; BUCKS; PHILADELPHIA; DELAWARE; CHESTER; LANCASTER; YORK; FRANKLIN; HUNTINGDON; BEDFORD; ALLEGHENY.

4. *Carduus odoratus* (Muhl.) Porter. PASTURE THISTLE. FRAGRANT THISTLE. (Man. p. 1032; I. F. f. 4067.) In fields, Me. to Pa. and Del.—*Pennsylvania*: MONROE; BUCKS; DELAWARE; CHESTER; LANCASTER; HUNTINGDON; SOMERSET; ALLEGHENY.

5. *Carduus spinosissimus* Walt. YELLOW THISTLE. (Man. p. 1033; I. F. f. 4069.) In moist or dry sandy soil, Me. to Pa., Fla. and Tex. Abundant along edges of salt meadows in N. Y. and N. J.—*Pennsylvania*: LANCASTER; CHESTER; DELAWARE.

6. *Carduus muticus* (Michx.) Pers. SWAMP THISTLE. (Man. p. 1033; I. F. f. 4070.) In swamps and moist soil, Newf. to Fl., N. W. Terr. and Tex.—*Pennsylvania*: NORTHAMPTON; BUCKS; CHESTER; LANCASTER; DAUPHIN; BERKS; HUNTINGDON; WASHINGTON; ERIE; ALLEGHENY.

7. *Carduus arvensis* (L.) Robs. CANADA THISTLE. CREEPING THISTLE. (Man. p. 1033; I. F. f. 4071.) In fields and waste places, Newf. to Va., Minn. and Neb. Nat. from Eu.—*Pennsylvania*: TIOGA; LACKAWANNA; MONROE; LYCOMING; COLUMBIA; NORTHAMPTON; BUCKS; DELAWARE; CHESTER; LANCASTER; ALLEGHENY.

8. *Carduus nutans* L. MUSK THISTLE. PLUMELESS THISTLE. (Man. p. 1033; I. F. f. 4072.) In waste places, Pa. and N. J. to N. B. and in ballast about seaports. Nat. or adv. from Eu. Native also of Asia.—*Pennsylvania*: DAUPHIN, Harrisburg.

9. *Carduus crispus* L. CURLED THISTLE. (Man. p. 1033; I. F. f. 4073.) In waste places, N. B. and N. S., and in ballast grounds about seaports. Adv. from Eu. Native also of Asia.—*Pennsylvania*: PHILADELPHIA, ballast.

53. *MARIANA* Hill.

1. *Mariana Mariana* (L.) Hill. MILK THISTLE. (Man. p. 1034; I. F. f. 4074.) Escaped from gardens, Kingston, Ont. In ballast about eastern seaports, and on Pacific coast from B. C. to southern Calif., where it is naturalized.—*Pennsylvania*: PHILADELPHIA, ballast.

54. *ONOPORDON* L.

1. *Onopordon Acanthium* L. COTTON THISTLE. SCOTCH THISTLE. (Man. p. 1034; I. F. f. 4075.) In waste places, N. S. and Ont. to N. J. and Mich. Nat. from Eu. Native also of Asia.—*Pennsylvania*: PHILADELPHIA, waste places; ALLEGHENY.

55. *CENTAUREA* L.

Bracts of the involucre fimbriate or lacerate, not spiny.

Annual plants: pappus about the length of the achene. 1. *C. Cyanus*.

Perennial plants: pappus obsolete or short.

All flowers perfect, the marginal with scarcely enlarged corollas.

2. *C. nigra*.

Marginal flowers neutral, with palmately cleft corollas. 3. *C. Jacea*.

Bracts of the involucre tipped with spines.

4. *C. Calcitrapa*.

1. *Centaurea Cyanus* L. CORN BLUE-BOTTLE. CORN-FLOWER. (Man. p. 1035; I. F. f. 4076.) In waste places, escaped from gardens, and in ballast, Quebec to western N. Y. and Va.—*Pennsylvania*: NORTHAMPTON; PHILADELPHIA; DELAWARE, Tinicum; CHESTER; LANCASTER; ALLEGHENY.

2. *Centaurea nigra* L. BLACK Knap-weed. HORSE KNOPS. HARD-HEADS. CENTAURY. (Man. p. 1035; I. F. f. 4077.) In waste places and fields, Newf. to Ont. and N. J. Nat. from Eu.—*Pennsylvania*: PHILADELPHIA, Fairmount Park.

3. *Centaurea Jacea* L. BROWN OR RAYED Knapweed. (Man. p. 1035; I. F. f. 4078.) In waste places, northern N. Y. and Vt., and in ballast about eastern seaports. Also in B. C. Fug. from Eu.—*Pennsylvania*: PHILADELPHIA, waste places.

4. *Centaurea Calcitrapa* L. STAR THISTLE. (Man. p. 1035; I. F. f. 4080.) In waste places and ballast, southern N. Y. and N. J. to Va. Also in B. C. Adv. or nat. from Eu.—*Pennsylvania*: BUCKS; PHILADELPHIA

56. *CNICUS* L.

1. *Cnicus benedictus* L. BLESSED THISTLE. OUR LADY'S THISTLE. (Man. p. 1036; I. F. f. 4081.) In waste places, N. S. to Md., Pa. and Ala. and on Pacific coast. Adv. from Eu.—*Pennsylvania*: LYCOMING.

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